

MEASURING THE AESTHETICS OF PHOTOGRAPHIC COMPOSITION USING CARTESIAN COORDINATE APPROACH TO PROVE VISUAL BALANCE

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Volume 8 Nomor 1,
Mei 2024: 1 - 14

Received: 24 February 2024	Accepted: 7 May 2024	Published: 31 May 2024
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ABSTRACT

Measuring the Aesthetics of Photographic Composition Using Cartesian Coordinate Approach to Prove Visual Balance. Photography is used for creative and reflective purposes, much like in fine art photography. The main goal of photographic aesthetics is to produce works that are not only technically sound but also have high artistic value. The research method used is qualitative descriptive. This study aims to measure the aesthetics of composition in photography with a focus on proving visual balance. Composition aesthetics are studied through the analysis of elements such as the golden ratio, symmetry, and tonal distribution. The research method involves collecting and analyzing data from sample photos with various compositions. The results show that visual balance can be measured using mathematical approaches and aesthetic principles, which influence the perception of beauty in a photo. The implications of this research are to strengthen understanding of how visual composition affects aesthetic judgment in photography. This research produces measures of aesthetic visual balance composition that will elevate case studies of six photographs from six professional photographers of different genres, whose works are internationally recognized, namely the works of photographers Natalie Dybisz, Lee Jeffries, Jimmy Nelson, Ansel Adams, Dorothea Lange, and Robert Capa, which will be measured visually using a three-to-two basic framing grid approach.

Keywords: aesthetic of photography, composition, visual balance

INTRODUCTION

The history of photography is a long journey that began long before the existence of the modern cameras we are familiar with today. Here is a general overview of the development of photography from its beginnings to the modern era (Sutedja and Athoriq). Photography is a conveyance of visual elements in digital form (Karyadi). The

concept of visual refers to conveying messages to viewers and also represents visual representations of ideas based on the creation, selection, and arrangement of visual elements to create effective communication (Streit).

Pre-Photography, before the invention of the camera, humans had developed methods to record images. For example, prehistoric cave

paintings and reliefs found in ancient Egypt demonstrate early human efforts to record the world around them.

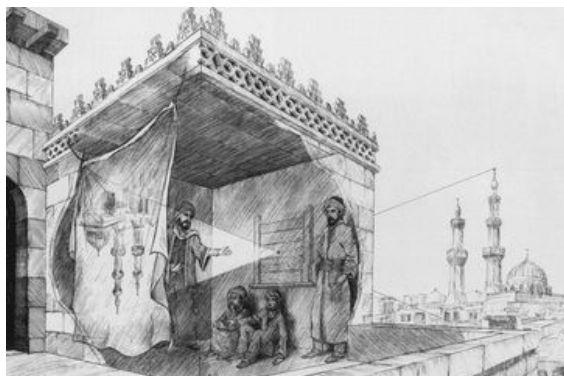


Image 1, Alhazen, The figure of the first scientist who invented the Camera Obscura (Source: National Geographic Indonesia, Grid.ID)

The invention of the camera obscura, the basic concept of photography, emerged in the 11th century when an Arabian optical expert named Alhazen developed the camera obscura, a device that used a small hole to project an inverted image from outside into a room. The camera obscura was used by artists to aid in drawing.

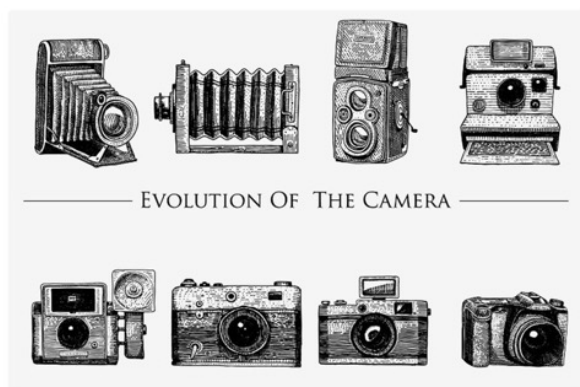


Image 2, *Evolution of the Camera* (Source: Science and Technology News)

The invention of modern photography began in the early 19th century with the invention of the first

camera by Joseph Nicéphore Niépce in 1826. Niépce succeeded in creating a permanent image using a technique called heliography. Louis Daguerre later developed the daguerreotype process, which became the first commercially produced photographic method.

Early Photography Era, in the mid-19th century, photography became increasingly popular. Processes such as wet collodion and albumen print were developed, allowing for faster and cheaper production of photographic prints.

Photography industry grew bigger by the late 19th and early 20th centuries in that the photography industry experienced rapid growth. Smaller and more portable cameras became available, and technologies such as roll film and pocket cameras made photography more accessible to the general public. Photography as a new media art continues to experience development (Retno et al.).

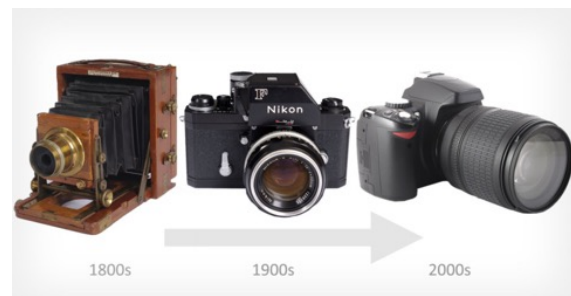


Image 3, *Three Eras of Photography* (Source: Universitas STEKOM)

Modern photography era which started in the 20th century witnessed

further advancements in photography technology, including the invention of the Single-Lens Reflex (SLR) camera, color film, and later digital photography. Photography was not only used for documentation but also as a powerful form of art and communication media.

Digital photography and the internet era, the invention of digital photography in the late 20th century transformed how people capture, store, and share images. The development of the internet allowed photography to be quickly disseminated and widely accessed through online platforms such as social media and gallery websites.

The history of photography continues to evolve alongside technological advancements and changes in culture and society. Photography remains an important tool for recording history, expressing creativity, and enhancing visual communication in the modern era. Throughout the ages, photography has always showcased different visual expressions and subjects based on its time (Mulyanta). Photography requires techniques so that the components within the photo can evoke value and meaning (Surahman et al.). Fundamentally, photography always shares similarities in terms of applying visual composition (Prasetyo), The technique of applying light (Gautama Tanrere) is always combined with visual elements in achieving the purpose of photography

(Kusuma). Therefore, this research aims to prove that visual aesthetics can be formed not only based on taste or preference, but it can also be measured through calculation of framing division ratios. It is hoped that this will facilitate beginner photographers in determining how to position subjects comfortably so that the desired message and impression can be conveyed perfectly to the eye.

RESEARCH METHODOLOGY

The research method used was qualitative descriptive. According to Bogdan and Guba, the qualitative approach in research produces data in the form of graphic descriptions or depictions, rather than numerical data (Murdiyanto). Sukmadinata explains that qualitative research is conducted with specific arrangements in life to understand social phenomena. Meanwhile, the descriptive approach aims to provide a factual portrayal of natural or human-made phenomena, which can help solve problems in research (Prasetyo).

Basic Framing Grid

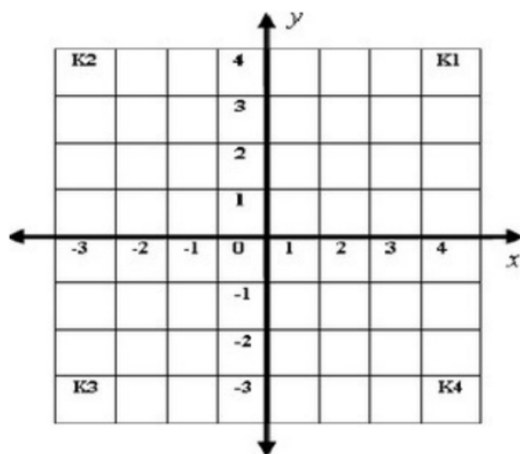


Image 4, Basic Framing Grid (Source: Personal)

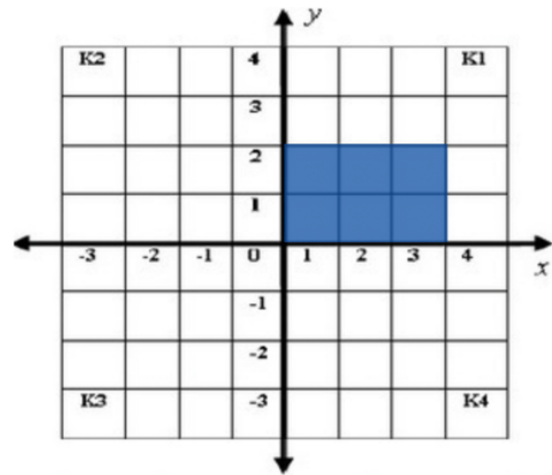


Image 5, Basic Framing Grid (Source: Personal)

Image 4, in mathematics, the Cartesian coordinate system is used to determine the position or location of each point in a plane using two numbers commonly referred to as x (abscissa) and y (ordinate) of that point. To determine the location of the point, 2 lines are needed as perpendicular axes along with the unit length on each line. To better understand the x and y axes, let's review their differences. The x-axis (abscissa) is a horizontal line representing the first number of the location or position of a point. From point 0, which is the intersection of the lines, to the left are negative numbers, and to the right are positive numbers. The y-axis (ordinate) is a vertical line representing the second number of the location or position of a point. From point 0, which is the intersection of the lines, upward are positive numbers, and downward are negative numbers.

Image 5, the author attempts to apply the Cartesian diagram as a reference for positioning the visual subject of photography within a framing, where the x-axis (abscissa) is set as $x=3$, and the y-axis (ordinate) is $y=2$ (shown as the blue visual in Image 5).

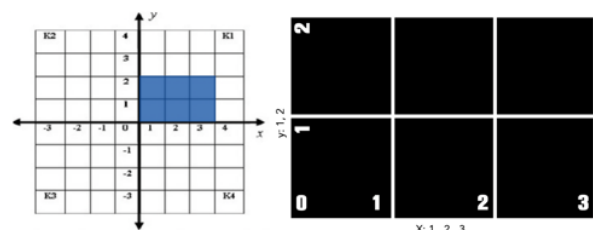


Image 6, Basic Framing Grid (Source: Personal)

Image 6 shows how to measure visual composition in photography using the basic framing grid approach of 3:2 vertically (Everlin). Within one framing, it is divided into nine equal square sections, three horizontally from left to right ($x=3$), and two vertically from top to bottom ($y=2$).

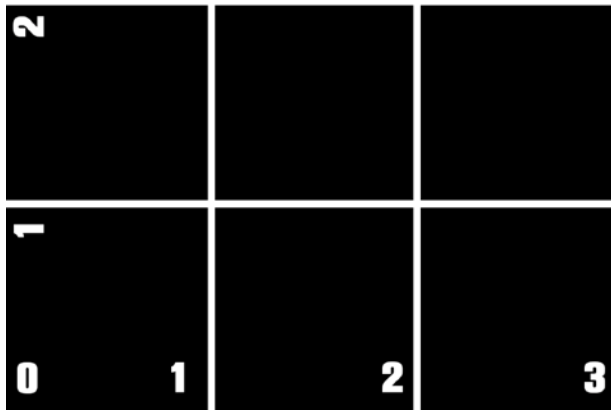


Image 7, Basic Framing Grid
(Source: Personal)

Image 7, the photography subject ideally intersects with the basic framing grid aiming to determine the position of an ideal visual composition, such as the rule of thirds (Christian Hoiberg). By all means, the question arises as to the extent to which the aesthetics of photographic composition can be measured using the basic framing grid (Linando), Because this could potentially serve as one of the benchmarks in measuring visual beauty effectively, a proof is required in this research.

The selection of these 6 works is based on the works of each photographer that have been most widely published and recognized by the general public in the world of photography. Taken by looking at random sampling from each photographer's website published on the main display, book publications, official social media posts of photographers who have a considerable interest, and opinions from several fellow photographers.

Photography Aesthetics

Photography is used for creative and reflective exploration purposes, much like in fine art photography (Setiawan and Ag). The aesthetics of photography is a branch of art that concerns the arrangement of visual elements in a photograph to create a beautiful or aesthetically appealing impression. It involves an understanding of composition, lighting, color, shape, line, texture, and various other elements that contribute to the aesthetic quality of a photo (*Komposisi-Dalam-Sinematografi @Pakarkomunikasi.Com*).

The main goal of photography aesthetics is to produce works that are not only technically proficient but also have high artistic value. Photography as an art form allows photographers to express their vision and emotions through visual works (Octaviano).

The aesthetics of photography is also influenced by various genres or styles of photography, such as documentary photography, portraiture, landscape photography, abstract photography, and so on. Each genre has a different approach to the use of aesthetic elements to achieve its artistic goals and beauty.

In aesthetic terms, photography provides different perspectives for each photographer or creator of their work (Inesia). Photography can be

interpreted as a meaning-making process for audience perception.

The experiences, interests, and talents of each photographer are certainly one of the differentiating factors in terms of the aesthetic perspective of their work. Each visual communication language is communicated visually through layout, color, and angle of the image capture to the general audience (Prasetyo).

DISCUSSION

When examining the works of world-renowned photographers across various genres, one can observe how they showcase aesthetic beauty visually. How do photographers position subjects as the focal point of audience attention (point of interest) with specific objectives in mind (Setyowulan et al.). In the case study of this research, there will be 6 photo works from 6 professional photographers of different genres whose works are globally recognized, they are Natalie Dybisz, Lee Jeffries, Jimmy Nelson, Ansel Adams, Dorothea Lange, and Robert Capa, whose works will be measured visually using the basic framing grid approach of 3:2 (3:2).

Natalie Dybisz - Conceptual Art



Image 8, *Another Whirl*

(Source: Natalie Dybisz Photography)

Image 8, Natalie Dybisz is renowned for her conceptual photography works that showcase emotional visual art in expressing something. In the work "another whirl," as seen, 6 models are dancing together in luxurious royal attire, against a luxurious backdrop resembling a palace setting.

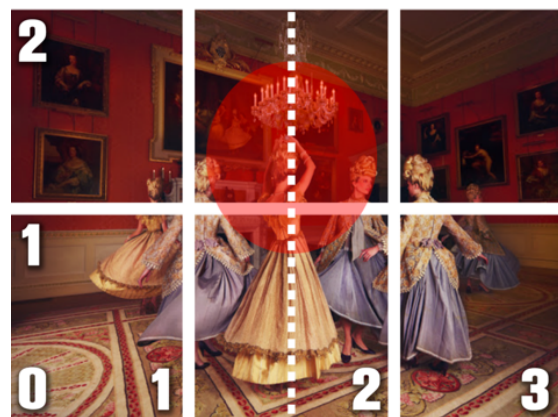


Image 9, *Another Whirl*

(Source: Natalie Dybisz Photography)

Image 9, the point of interest is located precisely in the middle of the 3:2 frame, positioned between x_1 , x_2 , and y_1 . This makes the main subject

the focal point amidst other subjects, as evident from the gesture of raising both hands, and the subject standing directly under the main room light (Doni et al.). A symmetrical balance composition like this is typically referred to as the rule of symmetry or symmetrical balance (Prasetyo).

Lee Jeffries - Portrait



Image 10, *Woman Portrait Photography*
(Source: Lee Jeffries Photography)

Image 10, Lee Jeffries is a photographer known for his work highlighting emotionally charged portraits of people and street life. He is renowned for his strong black-and-white photography style, which often captures faces full of expressions and interesting details. Jeffries frequently collaborates with homeless individuals and marginalized members of society, and his works often provide profound insights into their lives. Jeffries' works have been exhibited worldwide and have received much praise from the photography community and the general public. In this image, a portrait of a woman wearing glasses with a surprised expression is

depicted, showcasing detailed expressions in black and white style.



Image 11, *Woman Portrait Photography*
(Source: Lee Jeffries Photography)

Image 11, the point of interest is located precisely in the middle of the 3:2 frame, positioned between x_1 , x_2 , and y_1 . This makes the main subject the focal point in the middle of the frame, showcasing clarity in facial expressions and facial details such as eyebrow lines, both eyes, and the open mouth using glasses as a prop. Photography requires techniques to evoke value and meaning from the components within the photo (Rahmayati). This occurrence gives a strong impression of expression as the audience's eyes directly see the eye interaction, facial wrinkles, white hair, and the entire dominant facial area almost filling the frame with a zoom-in technique. Thick glasses as a property and white hair certainly add to the impression that this woman is a mother over 50 years old.

Jimmy Nelson- Photographer documenting customs/traditions



Image 12, Photography of Indigenous Tribes (Source: Jimmy Nelson Photography)

Image 12, Jimmy Nelson is a British photographer and writer known for his projects photographing and documenting various indigenous tribes and cultures threatened with extinction worldwide. One of his famous projects is "Before They Pass Away," where Nelson travels to various parts of the world to capture portraits of indigenous tribes that still maintain their unique traditions. Through his work, Nelson aims to celebrate the cultural diversity in the world and raise awareness about the importance of preserving this cultural heritage. Nelson's works often feature magnificent and colorful portraits of individuals from various cultures, prompting viewers to reflect on the beauty and vulnerability of cultural diversity in the world.



Image 13, Photography of Indigenous Tribes (Source: Jimmy Nelson Photography)

Image 13, the point of interest is located precisely at one-third of the frame's 3:2 aspect ratio, positioned between x_1 and y_1 . This makes the main subject the focal point in the composition according to the rule of thirds, with the subject standing in the middle of the desert. This can be seen from the subject's standing position forming an asymmetric balance in the frame. The emptier right side of the frame provides a directional gaze impression of the subject.

Ansel Adams - Landscape Photography



Image 14, Maroon Bells, near Aspen, Colorado, 1951 (Source: Ansel Adams Photography)

Image 14, "Maroon Bells, near Aspen, Colorado, 1951," showcases the beauty of the mountains at Maroon Bells. This photograph was taken in 1951 by the world-renowned photographer Ansel Adams. Ansel Adams was an American photographer famous for his iconic works in landscape photography, particularly in the United States. He was born on February 20, 1902, and passed away on April 22, 1984. Adams is known for his ability to capture the beauty of nature through high-quality black-and-white photography techniques. His works often feature dramatic and magnificent natural landscapes, especially from national parks in the United States such as Yosemite and Yellowstone. In addition to being a photographer, Adams was also active as an environmental advocate and conservationist. His work has influenced many other photographers and visual artists, and he is considered one of the most influential photographers in the history of photography.



Image 15, Maroon Bells, near Aspen, Colorado, 1951
(Source: Ansel Adams Photography)

Image 15, the point of interest is located precisely in the middle of the 3:2 frame, positioned between x_1 , x_2 , y_1 , and y_2 . This creates a composition with symmetrical balance because the point of interest lies on the snowy mountain as the main subject, and its central position within the frame visually depicts balance in the middle of the frame. This gives a clear focus to the landscape photo, and even though it is in black and white, the details of the mountains in the distance are clearly visible.

Dorothea Lange - Portrait



Image16, Grandfather and Grandson, Manzanar, 1942
(Source: Dorothea Lange Photography)

Image 16, titled "Grandfather and Grandson, Manzanar," was taken in 1942 by the photographer Dorothea Lange. Dorothea Lange was an American documentary photographer renowned for her work depicting the lives of people during the Great Depression in the United States. She was born on May 26, 1895, and passed away on October 11, 1965. Lange was known for her ability to capture emotionally charged and socially poignant images, particularly through her projects with the Farm Security Administration (FSA) funded by the federal government of the United States. One of her most iconic photographs is "Migrant Mother," depicting a poor young mother with her three children, which became a symbol of the hardships faced by millions of Americans during the Great Depression. Her works have been highly influential in the history of documentary photography and continue to be recognized even today.



Image 17, Grandfather and Grandson, Manzanar, 1942
(Source: Dorothea Lange Photography)

Image 17, the point of interest is located precisely in the middle of the 3:2 frame, positioned between x_1 , x_2 , y_1 , and y_2 . This creates a composition with symmetrical balance because the point of interest lies on the focused faces of a grandfather and a small grandson being carried on his back. This black-and-white photo depicts a flat expression with wrinkles on the grandfather's face while holding the hand of his small grandson. This makes the image undoubtedly clear as the focal point in the frame against the empty sky background.

Robert Capa - War Photographer



Image 18, soldier, 1943
(Source: Robert Capa Photography)

Image 18 depicts a soldier walking in a battlefield in 1943, captured by the photographer Robert Capa. Capa was a prominent war photographer from Hungary known for his dramatic and evocative work in documenting significant events in history, particularly during wartime. He was born on October 22, 1913, and

passed away on May 25, 1954. Capa was renowned for his bravery on the battlefield and his ability to capture emotionally charged and impactful moments through his work. One of his most famous photographs is "The Falling Soldier," taken during the Spanish Civil War in 1936. His work did not only showcase visual acuity but also highlighted the tension and anguish of war. Capa remains one of the most influential war photographers in history, and his work continues to inspire many photographers to this day.

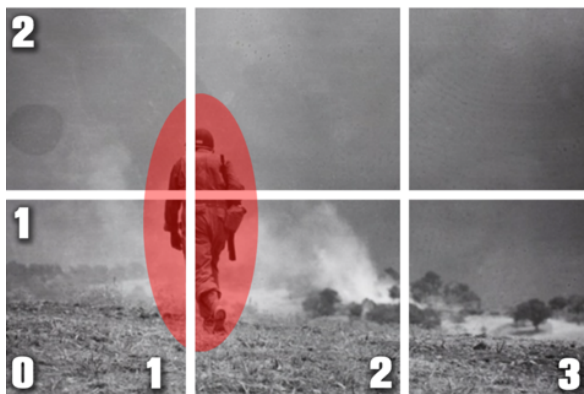


Image 19, soldier, 1943
(Source: Robert Capa Photography)

Image 19, the point of interest is located in the one-third section of the 3:2 frame, between x_1 and y_1 . This composition applied the Rule of Thirds with asymmetrical balance. The photo becomes more dramatic as it portrays a soldier walking away from the camera with his gun in the middle of a battlefield. This depiction visualizes a somber condition, with the right side of the frame left empty, indicating the direction the

soldier is moving towards, to the left side of the frame.

The rule of thirds sometimes creates an empty space on one side of the frame to convey a specific message in a photo, such as movement direction, perspective, and to avoid visual monotony.

CONCLUSION

Photography provides many benefits to human life, one of which is related to the advancement of science and the preservation of visual history memories over time, as demonstrated by renowned world photographers Natalie Dybisz, Lee Jeffries, Jimmy Nelson, Ansel Adams, Dorothea Lange, and Robert Capa, whose works have been measured through visual placement using the 3:2 basic framing grid approach.

When used in the context of visual knowledge, the composition and aesthetics of photography support photographers in delving deeper into measuring aesthetics in image composition application. The research reveals that composition can be measured using the Cartesian coordinate system to determine the position of each point in the plane using two numbers commonly referred to as x (abscissa) and y (ordinate) of the point. An aesthetic view of the position, the point of interest, which is

considered the core of the desired attention by the photographer in providing visual presentation to the audience, demonstrates two things: that symmetrical balance occurs when the subject is in the center of the frame, between points x_1 and x_2 . However, if placing the subject as the point of interest at points x_1 and y_1 , what occurs is the visual composition of the rule of thirds, which certainly applies when using the 3:2 frame with basic framing grid. Symmetrical balance aesthetically shows a clear position as the focal point of the eye, direct and rigidly visible due to the regular distribution of balanced visual compositions. Meanwhile, asymmetrical balance aesthetically shows a more dynamic, non-boring, and non-rigid position.

It is hoped that the research can serve as a reference for photographers who want to work technically and not only rely on aesthetically emotional image capture. Definitely, research can still be further developed and explored into the next form of application on how to measure visual aesthetics from the lighting side, camera settings, camera editing, and others.

APPRECIATION

Thank you to my fellow photographers in Indonesia who have supported the progress of this research,

and to my university colleagues from the Visual Communication Design program.

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