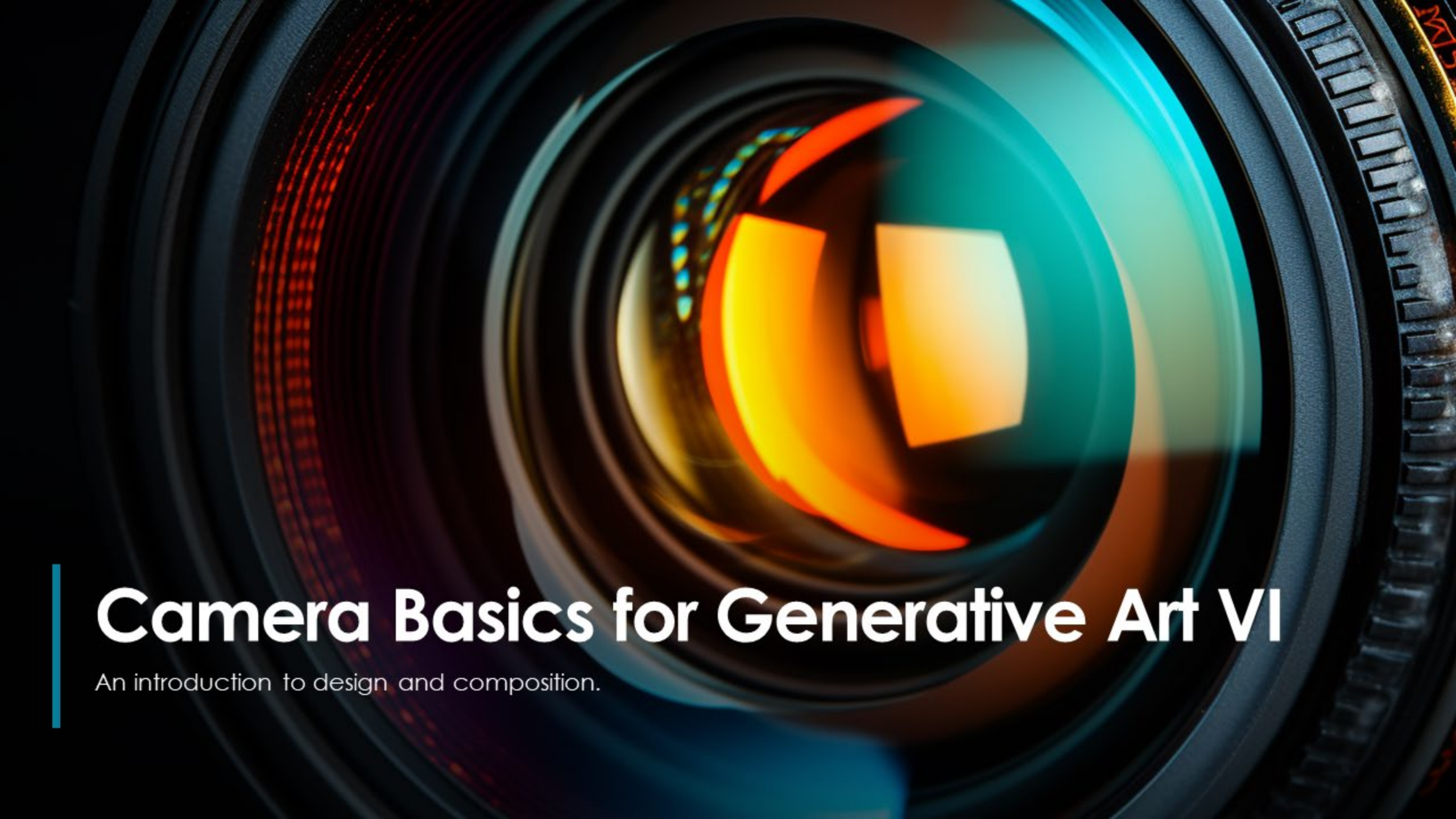


Camera Basics for Generative Art VI

An introduction to design and composition.

THE ELEMENTS OF DESIGN

If composition is a puzzle, the pieces would be the elements of design. Each element can stand on its own, or be combined with others to make a more dynamic composition. Most significantly, every element can find its origin in nature.

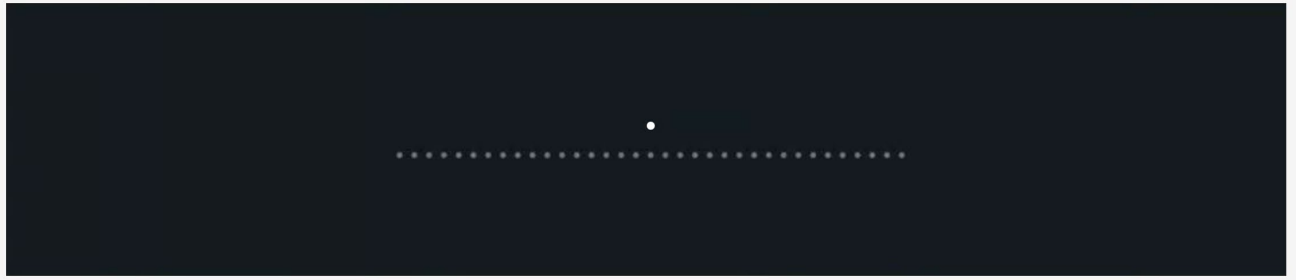
The Elements of Design, Part I

https://medialoot.com/blog/the-elements-and-principles-of-design/

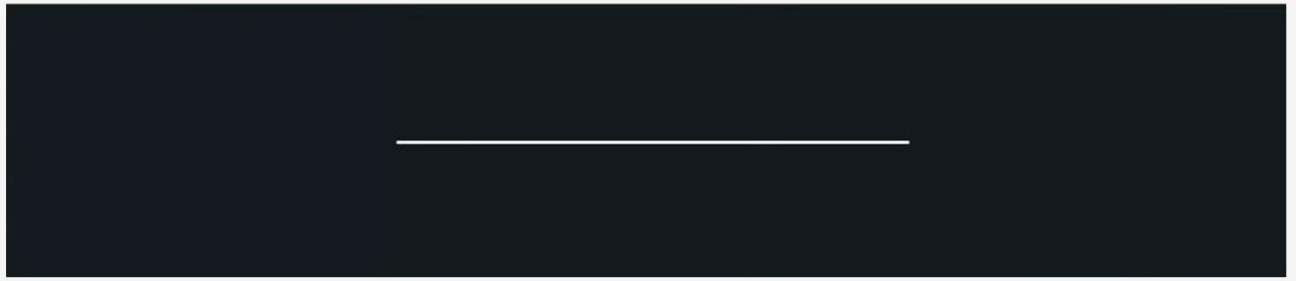
Design elements are the foundational components employed by designers to craft visual compositions. These elements serve as the fundamental building blocks, which can be isolated and defined in any design, shaping the structural framework of the work and forming the basis for arranging objects within a composition. While discussing design elements in a general context, irrespective of specific design types (such as editorial or web design), they typically **encompass point, line, shape, form, value, texture, color, and space.** Our focus in this module will be on **point, line, shape, and form.**

Miezaru Te • 10.9 x 6 • Hon-Atsugi, Japan • 8.6.2010 • f/11 • 1/500 sec • 320 ISO • 46 mm • Nikon D300 • Jazno Francoeur

POINT:
A point is the smallest and most basic element of design and it can be used alone or as a unit in a group (forming a line or a shape). It has position, but no extension, it is a single mark in a space with a precise and limited location and it provides a powerful relation between positive and negative space.

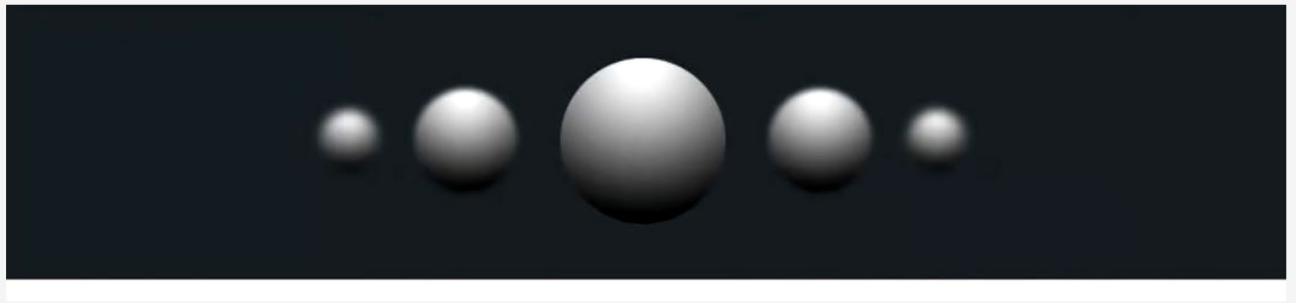


LINE:
If we place many points one next to the other we obtain a line, which can have length and direction, but no depth. Lines, besides being used to create a shape, can be used to create perspective and dominant directional lines (which create a sense of continuance in a composition). Also, they can be grouped to create a sense of value, density or texture.



SHAPE:
Shape is an element defined by its perimeter, a closed contour. It is the area that is contained within implied lines and it has two dimensions: height and width. A shape can be geometric (triangle, square, circle, etc.), realistic (animal, human, etc.) or abstract (icons, stylizations, etc.).

FORM:
Form is derived from the combination of point, line and shape. A form describes volume, the 3D aspect of an object that takes up space, and it can be viewed from any angle (a cube, a sphere, etc.). It has width, height and depth.



https://medialoot.com/blog/the-elements-and-principles-of-design/

The Element of the Point

As Wassily Kandinsky famously said: "Everything begins with the dot." The **point**, or **dot**, stands as a timeless testament to the foundational power of simplicity in both art and design. It's an elemental mark that traverses history, leaving its imprint on the visual narrative of human expression. From prehistoric cave paintings to the digital canvases of today, the point's significance endures.

In ancient cultures, the dot adorned sacred manuscripts, representing the convergence of the spiritual and the physical. Its history as a signifier of singularity, a starting point, and a unit of measurement spans centuries and civilizations.

Fast forward to modern design and art, where the point has achieved an iconic minimalistic power. It's a pixel on a screen, a drop of ink on a canvas—a microcosm of creation. The point's simplicity belies its influence, as it guides the viewer's eye, organizes space, and punctuates ideas. In design, the point's strategic placement can establish focal points and direct visual flow. In art, it signifies not just a mark, but a conscious intention—the beginning or end of a line, the seed of an idea.

The Element of the Point

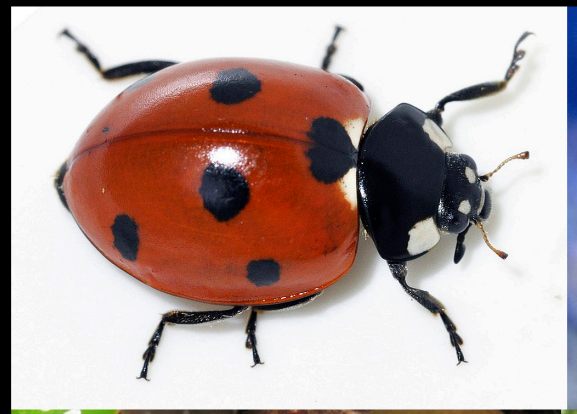
The point's ability to create maximal impact with the smallest gesture is its essence. It's the nucleus of abstraction, the seed of unity in patterns, and the embodiment of the concept of less is more. Its iconic power lies in its universal language—whether used as punctuation, brushstroke, or pixel, it transcends linguistic and cultural barriers to communicate ideas with clarity and elegance.

Many famous artists have fixated on this element, from the pointillism of Seurat to the manic self obliterating dots of Yoyoi Kusama to the mysterious obfuscating dots of John Baldessari— the dot captivates and inspires with its immense simplicity.

Infinity Room • 4032 x 3024 • Seattle, WA • 9.10.2017 • f/2.2 • 1/30 sec • 125 ISO • 4 mm • iPhone • Jazno Francoeur

Points in Nature

The preponderance of **points, or dots,** in the natural world represents a manifestation of Turing's explorations in pattern formation. Alan Turing, the pioneering mathematician and computer scientist, delved into the mathematical principles that underlie the emergence of patterns in various systems, which can be aptly applied to understanding the ubiquity of dots in nature. Turing's work highlighted how local interactions and **reaction-diffusion processes** can lead to the spontaneous creation of intricate patterns. In nature, this principle is exemplified by the spotted patterns found on diverse organisms**. Ladybugs** don their iconic polka-dotted attire, while **leopards** exhibit spots on their fur. These patterns emerge from underlying genetic and biochemical processes, reflecting Turing's theories of morphogenesis. Moreover, **dotted flowers**, like the Western Trillium, showcase a similar phenomenon. These floral patterns arise from differential pigment distribution and signaling within plant cells, a manifestation of Turing's reaction-diffusion concepts at work in botanical life. Even aquatic ecosystems contribute to this theme, with fish species such as the **pufferfish** displaying intricate patterns of dots and stripes, driven by biological and environmental factors.








Points in Nature

https://esahubble.org/images/heic0612d/

When we gaze upon the stars, we witness countless individual **points of light** scattered across the celestial canvas, forming constellations, galaxies, and nebulae. The patterns of stars in the night sky have intrigued humanity for millennia, prompting questions about their underlying order. Renowned physicist Stephen Hawking once remarked, "We are just an advanced breed of monkeys on a minor planet of a very average star. But we can understand the Universe. That makes us something very special." This understanding encompasses the quest to discern whether the stars' positions are random or follow some overarching logic. Albert Einstein, another luminary in the realm of astrophysics, proposed that the universe operates under fixed mathematical principles, suggesting that star positions might not be random but instead governed by cosmic equations. Pattern formation theory, championed by Alan Turing, offers insights into the potential order among stars. While individual stars may appear scattered randomly, their collective patterns, such as constellations and galactic formations, reflect the influence of gravity, stellar evolution, and cosmic forces.

YAYOI KUSAMA, 'PRINCESS OF THE POLKA DOT':

"ACCUMULATION MEANS THE STARS IN THE UNIVERSE DON'T EXIST BY THEMSELVES NOR DOES THE EARTH EXIST BY ITSELF. OUR EARTH IS ONLY ONE POLKA DOT AMONG A MILLION STARS IN THE COSMOS. IT IS JUST LIKE WHEN I SAW THE FLOWERS EVERYWHERE AND WHEN I CHASED THEM, I FELT PANICKED AND SO OVERWHELMED THAT I WANTED TO EAT THEM ALL. ONE DAY I WAS LOOKING AT THE RED FLOWER PATTERNS OF THE TABLECLOTH ON A TABLE, AND WHEN I LOOKED UP I SAW THE SAME PATTERN COVERING THE CEILING, THE WINDOWS AND THE WALLS, AND FINALLY ALL OVER THE ROOM, MY BODY AND THE UNIVERSE. ***I FELT AS IF I HAD BEGUN TO SELF OBLITERATE, TO REVOLVE IN THE INFINITY OF ENDLESS TIME AND THE ABSOLUTENESS OF SPACE, AND BE REDUCED TO NOTHINGNESS****."* ***HTTP://WWW.YAYOI-KUSAMA.JP/***

YAYOI KUSAMA, ‘PRINCESS OF THE POLKA DOT’:

*“**WITH JUST ONE POLKA DOT, NOTHING CAN BE ACHIEVED. POLKA DOTS CAN’T STAY ALONE.** MY LIFE IS A DOT LOST AMONG THOUSANDS OF OTHER DOTS. ACCUMULATION IS THE RESULT OF MY OBSESSION AND THAT PHILOSOPHY IS THE MAIN THEME OF MY ART.*

HTTPS://WWW.KIDSOFDADA.COM/BLOGS/MAGAZINE/17653285-YAYOI-KUSAMA-CONNECTS-THE-DOTS

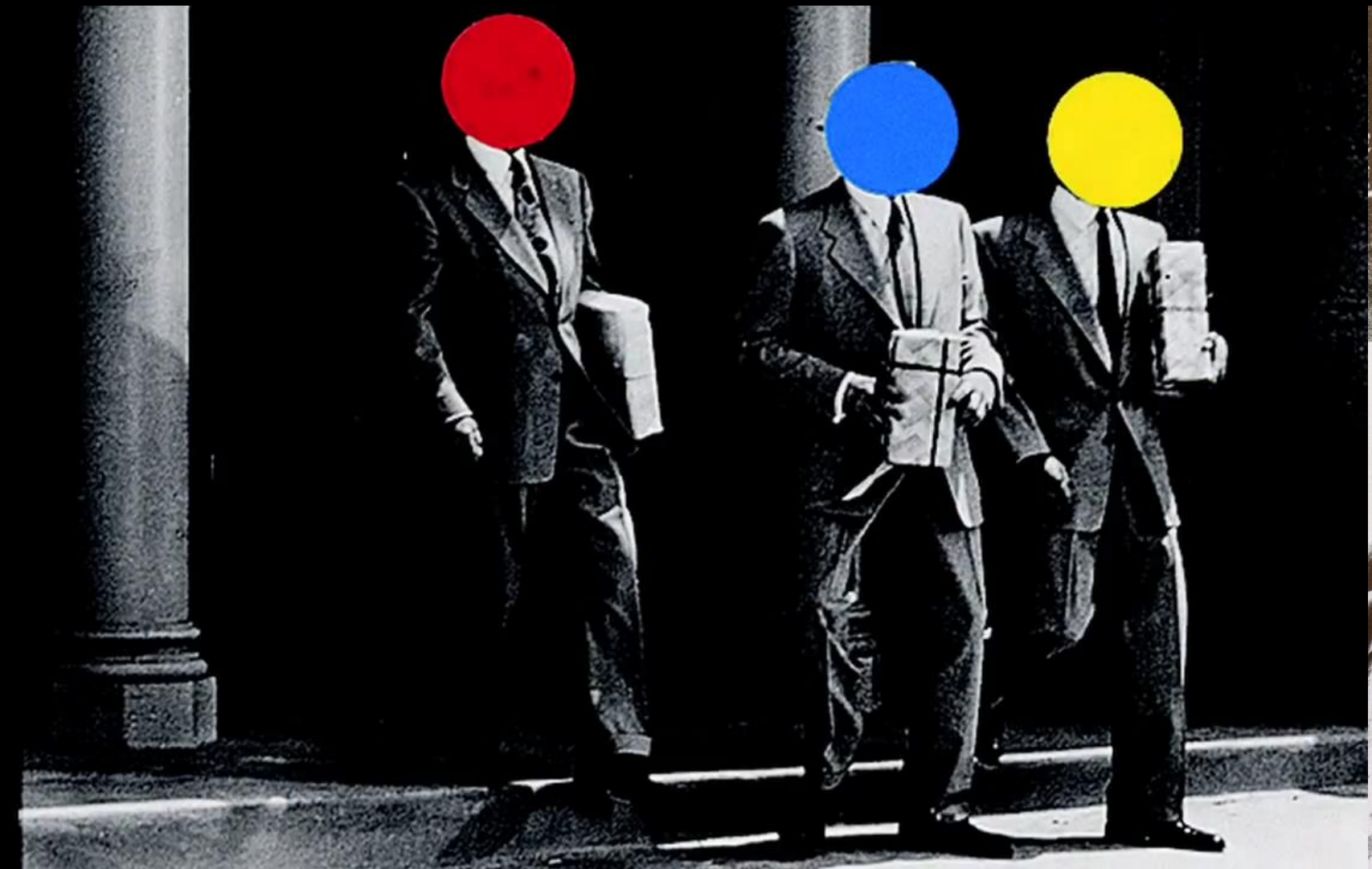
YAYOI KUSAMA, ‘PRINCESS OF THE POLKA DOT’:

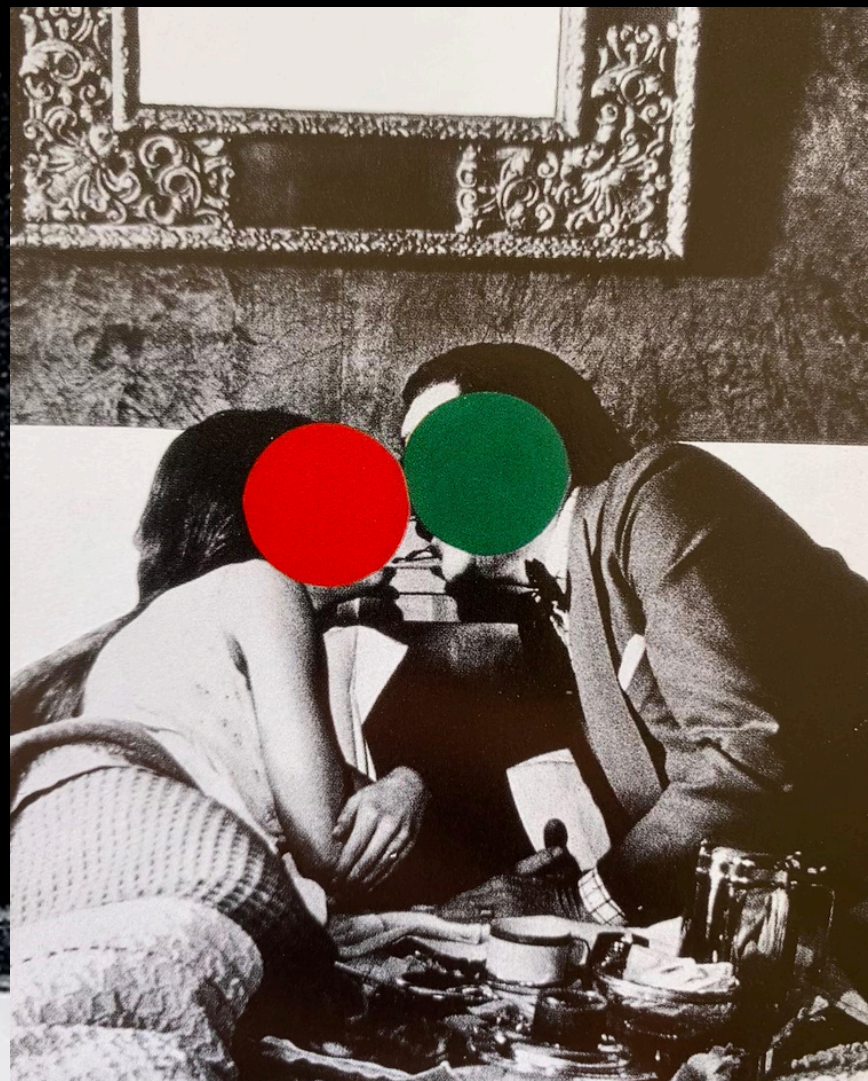
"A POLKA-DOT HAS THE FORM OF THE SUN, WHICH IS A SYMBOL OF THE ENERGY OF THE WHOLE WORLD AND OUR LIVING LIFE, AND ALSO THE FORM OF THE MOON, WHICH IS CALM. ROUND, SOFT, COLORFUL, SENSELESS AND UNKNOWING. POLKA-DOTS BECOME MOVEMENT... POLKA DOTS ARE A WAY TO INFINITY. ***I LOVE TO CREATE ART WITH DOTS. MY LIFE IS A DOT. MY AMBITION IS A DOT. MY LOVE IS A DOT. MY SOUL IS A DOT. MY OBSESSION IS A DOT. I HAVE LIVED MY LIFE AS A DOT.”*** *HTTP://WWW.YAYOI-KUSAMA.JP/*

JOHN BALDESSARI, POSTMODERN DOTS:

"I WAS GETTING TIRED OF PEOPLE SAYING MY ART WAS LIKE ABSTRACT EXPRESSIONISM. BEING IN NATIONAL CITY, WHERE NOBODY CARED WHAT I WAS DOING, I THOUGHT, WHAT IF YOU JUST GIVE PEOPLE WHAT THEY WANT? PEOPLE READ MAGAZINES, AND LOOK AT PHOTOGRAPHS, NOT AT JACKSON POLLOCKS. ***A HUNDRED YEARS FROM NOW, I WILL PROBABLY BE REMEMBERED AS THE GUY WHO PUT DOTS ON FACES."***

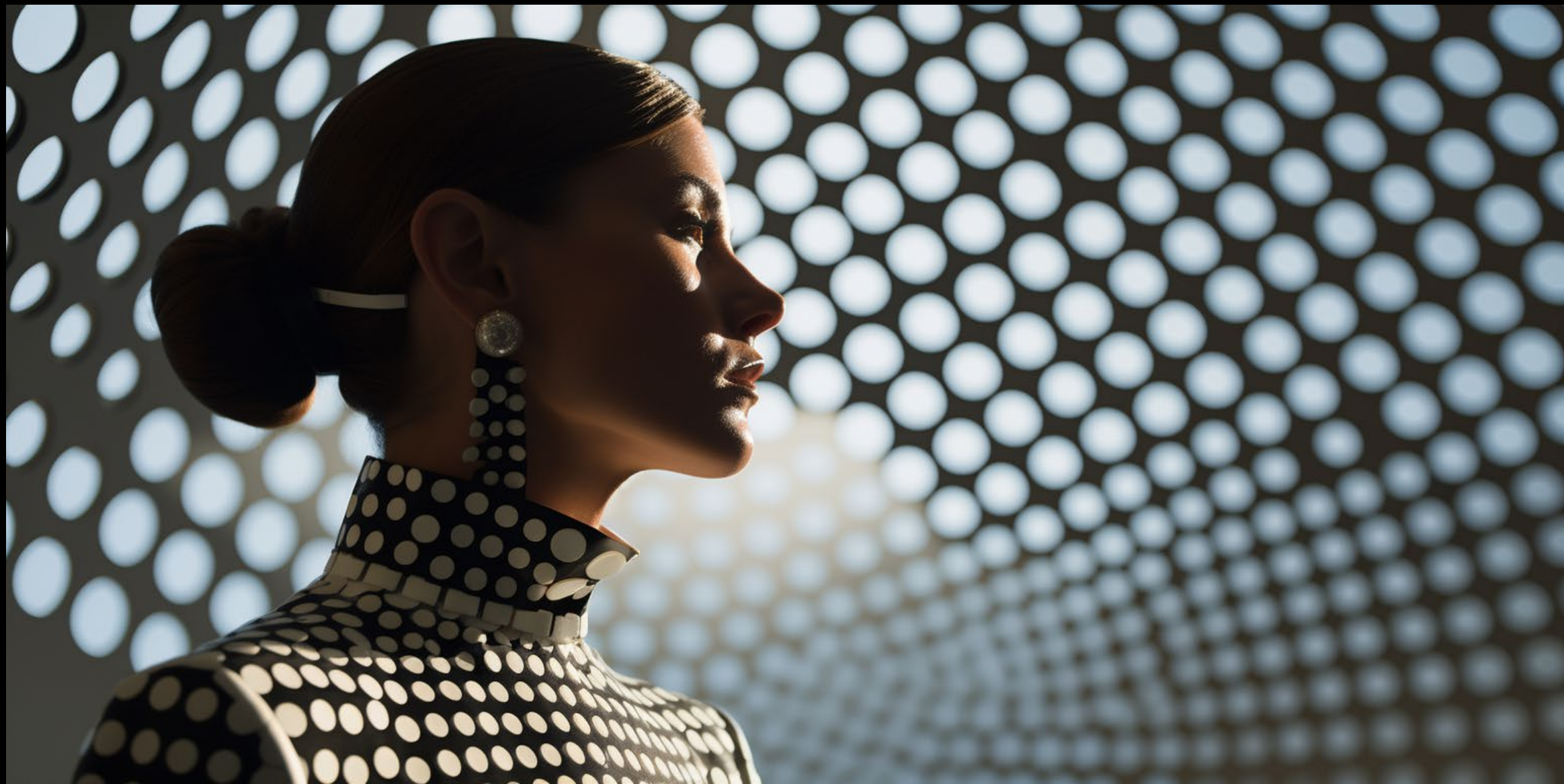
HTTPS://WWW.THELONDONLIST.COM/CULTURE/JOHN-BALDESSARI





POINTS/DOTS, AVANT-GARDE SERIES:

PROFILE VIEW, REBECCA HORN WEARING GEOMETRICAL ARCHITECTURAL AVANT-GARDE COSTUME COMPRISED OF **DOTS,** DUTCH ANGLE, EXTREME PERSPECTIVE, WORM'S EYE VIEW, STYLE OF GREGORY CREWDSON --AR 2:1 **[MIDJOURNEY 5.1]**



POINTS/DOTS, GALERIES DE L'ABSURD:

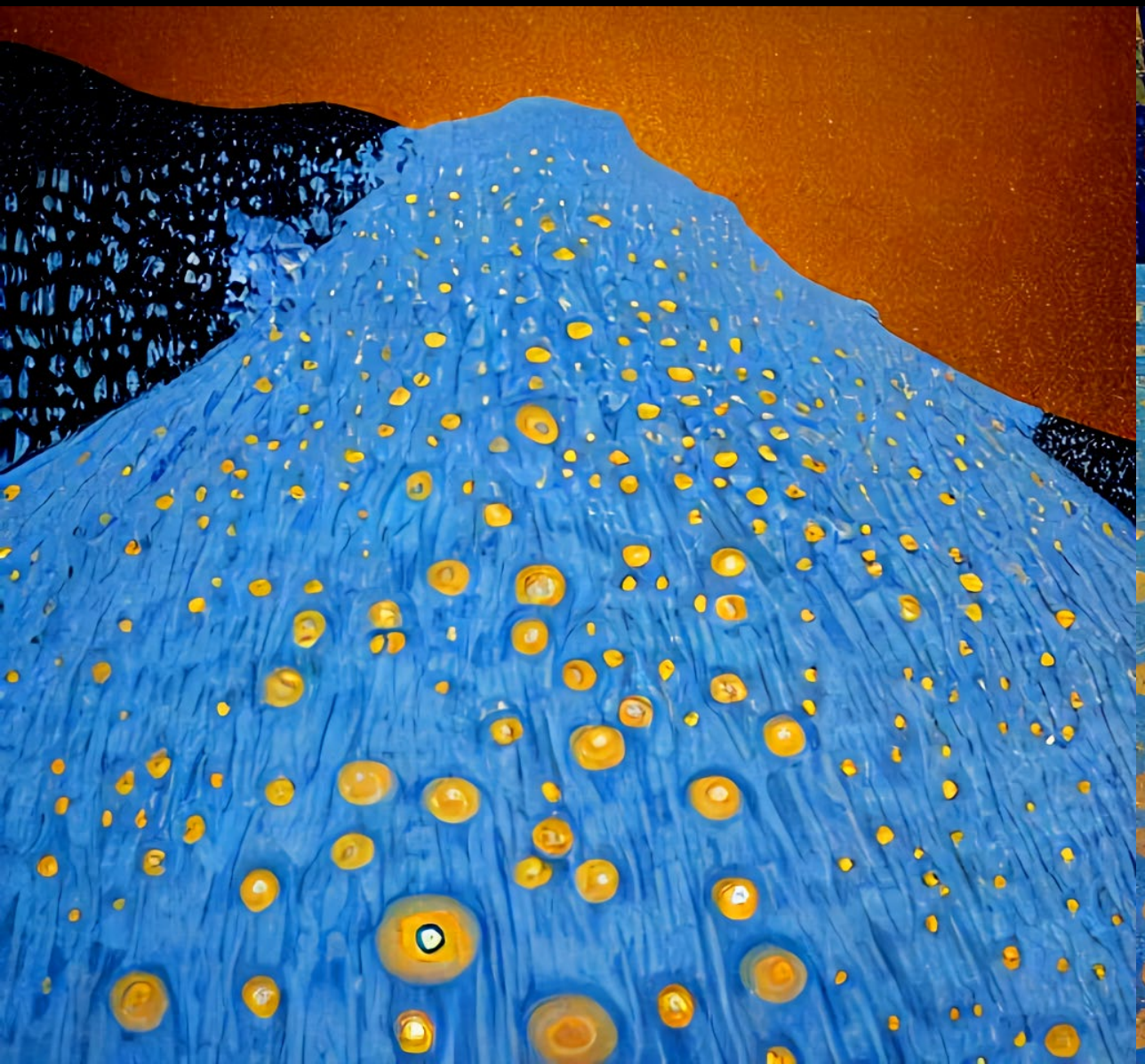
STYLE OF YAYOI KUSAMA, JENNY SAVILLE-INSPIRED TRIPTYCH PLUS-SIZE MODEL MADE UP OF DOZENS OF EXTRUDED SEPARATED PIECES OF HANGING FOUND OBJECTS IN THE FORM OF A GIANT CERAMIC MOBILE FROM METAL CABLES, MIRRORS, BOUNCED LIGHT, SPECULAR HIGHLIGHTS --AR 2:1 **[MIDJOURNEY 5.1]**

POINTS/DOTS, GALERIES DE L'ABSURD:

YAYOI KUSAMA + BASQUIAT, JENNY SAVILLE-INSPIRED TRIPTYCH MODEL MADE UP OF DOZENS OF EXTRUDED SEPARATED CERAMIC PIECES HANGING FROM METAL CABLES, MIRRORS, BOUNCED LIGHT, SPECULAR HIGHLIGHTS, DAPPLED LIGHT, TEXTURES OF BISMUTH GIRIH TILES, FAUVIST SUBCUTANEOUS PALIMPSEST OF NATA RAJA HENNA TATTOOS IN ROSHAN LATTICEWORK --AR 2:1 **[MIDJOURNEY 5.1]**

POINTS/DOTS, GUSTAV KLIMT AVALANCHES:

AVALANCHE IN THE STYLE OF **GUSTAV KLIMT**, EXPLOSION OF SNOW, BIRD'S EYE VIEW, BACKLIT, EXTREME PERSPECTIVE, GOLDEN HOUR **[STABLE DIFFUSION]**



POINTS/DOTS, SEURAT FARMER SERIES:

POINTILLISM, IMPRESSIONISM, IMPASTO, PAINTING OF A TURKISH FARMER MADE FROM DOTS, WITH OVERSIZED HEAD AND LARGE HANDS HOLDING A GIANT SQUASH IN THE **STYLE OF SEURAT**, GOLDEN HOUR, SUBSURFACE SCATTERING --AR 2:1 **[MIDJOURNEY 5.2]**

The Element of the Line

A **line** is an identifiable path created by a point moving in space. It is one-dimensional and can vary in width, direction, and length. Lines often define the edges of a form. Lines can be horizontal, vertical, or diagonal, straight or curved, thick or thin. They lead your eye around the composition and can communicate information through their character and direction.

Horizontal lines suggest a feeling of rest or repose because objects parallel to the earth are at rest.

Vertical lines often communicate a sense of height because they are perpendicular to the earth, extending upwards toward the sky.

Horizontal and vertical lines used in combination communicate stability and solidity. Rectilinear forms with 90-degree angles are structurally stable. This stability suggests permanence and reliability.

https://www.getty.edu/education/for_teachers/building_lessons/elements.html

Line Variations

Diagonal lines convey a feeling of movement. Objects in a diagonal position are unstable. Because they are neither vertical nor horizontal, they are either about to fall or are already in motion. In a two-dimensional composition, diagonal lines can also indicate depth through perspective. These diagonal lines pull the viewer visually into the image.

The **curve of a line** can convey energy. Soft, shallow curves recall the curves of the human body and often have a pleasing, sensual quality and a softening effect on the composition. Sharply curved or twisted lines can convey turmoil, chaos, and even violence.

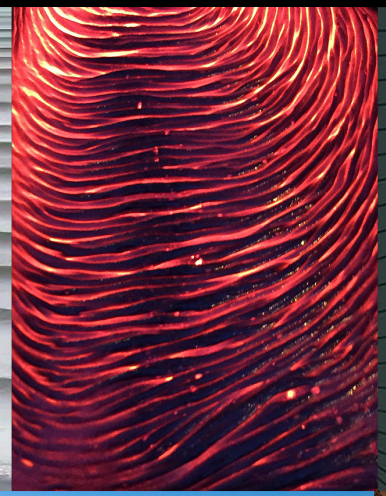
When repeated, lines can create a **pattern**. Patterned lines also give the image **rhythm.**

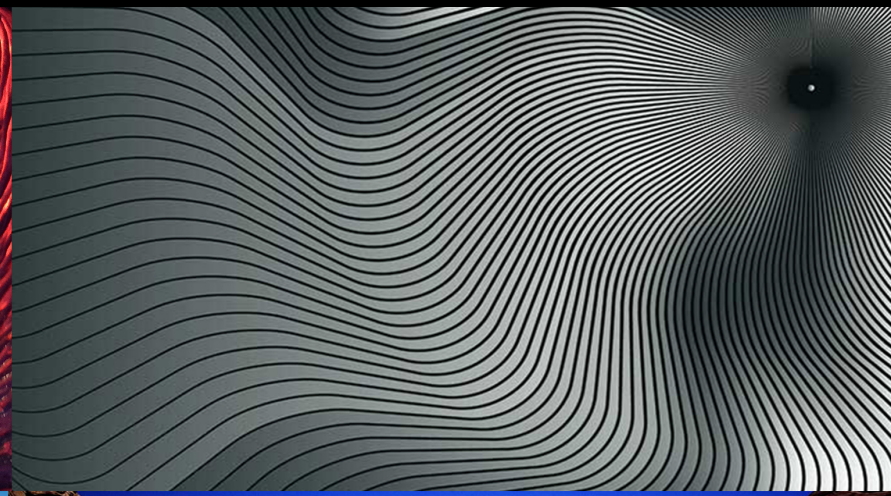
https://www.getty.edu/education/for_teachers/building_lessons/elements.html

Le Monde d'Esprit • 36 x 27 • Auber, Cannes, France • 1.24.2004 • f/2.8 • 1 sec • 320 ISO • 7 mm • Sony DSC-V1 • Jazno Francoeur

Lines in Nature

In the remote reaches of Utah's desert, **Liesegang banding** graces the Wave's sandstone formations. Much further south, the Pacific's gentle embrace births Puerto Chicama's **linear waves** in Peru, a harmonious symphony of wind and ocean currents resulting in the world's longest surfable waves. Across the vast Sahara, relentless winds sculpt **linear patterns** in golden dunes, ruled by granular physics and fluid dynamics. These phenomena, disparate in scale and origin, share a common thread: despite differences in scale, origin, material, or time, these natural phenomenal share the same visual characteristics. This highlights how gradients and external forces, whether geological, oceanic, or aeolian, underpin nature's capacity to create linear patterns across a diverse range of landscapes and contexts.



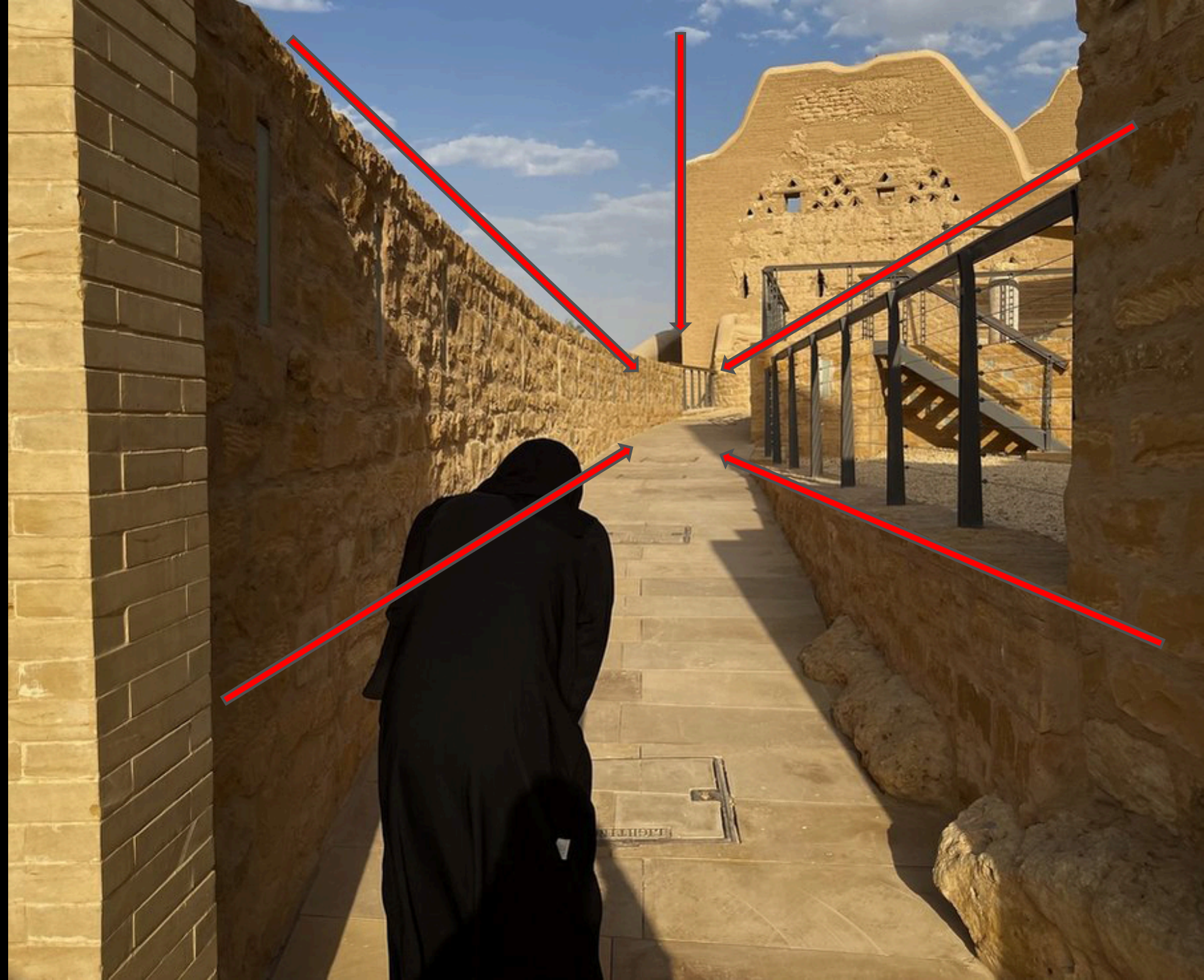


Leading Lines

Leading lines are a compositional technique in photography that employs implied lines or visual pathways to guide the viewer's gaze and create emphasis within an image. These lines subtly direct the viewer's attention toward a specific focal point or subject, enhancing the overall impact of the composition.

By using these unseen lines strategically, photographers can draw viewers into the frame, leading them from one part of the image to another. This technique not only aids in controlling the viewer's perception but also adds a sense of depth and movement to the photograph. The 'invisible' nature of these lines makes the composition feel more natural and unforced, allowing the viewer to explore the image organically. For instance, an image of a sunset over a beach might incorporate the converging lines of receding waves and the shoreline to subtly lead the viewer's eyes from the foreground to the horizon where the sun sets. This imparts a dynamic quality and draws attention to the main subject.

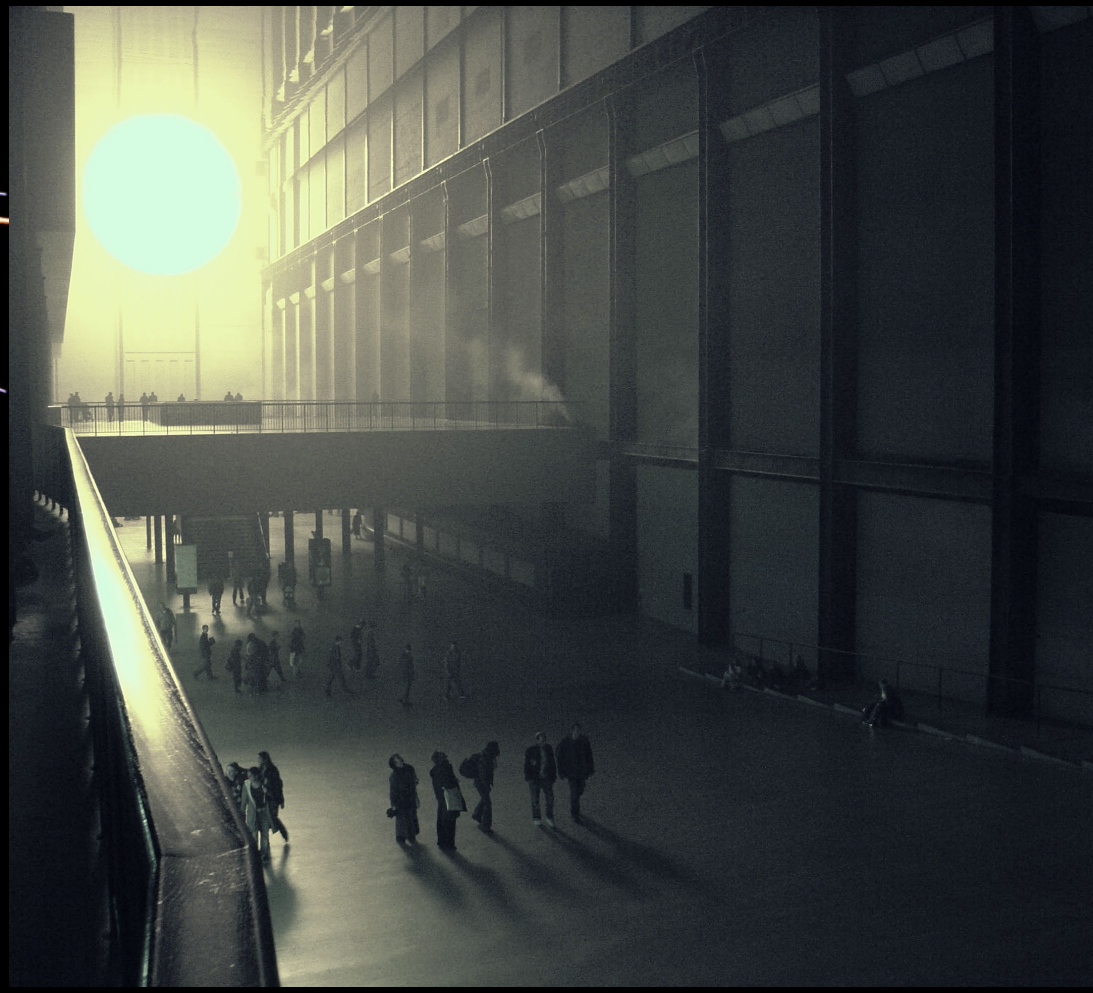
Diriyah • 3845 x 2582 • Riyadh, Saudi Arabia • 8.6.2021• f/1.6 • 1 sec • 32 ISO • 5 mm • iPhone • Jazno Francoeur



Leading Lines

In the realm of photography, **leading lines** can happen as a result of spontaneous events, but most often can be found in architectural environments, where perspective can be used to emphasize the focal point. In visual art, one has more latitude to design a composition with leading lines, which do not have to be linear.

Spanish Oyster • 14.3 x 9.5 • Hon-Atsugi, Japan • 8.6.2010 • f/8 • 2.5 sec • 320 ISO • 120 mm • Nikon D300 • Jazno Francoeur

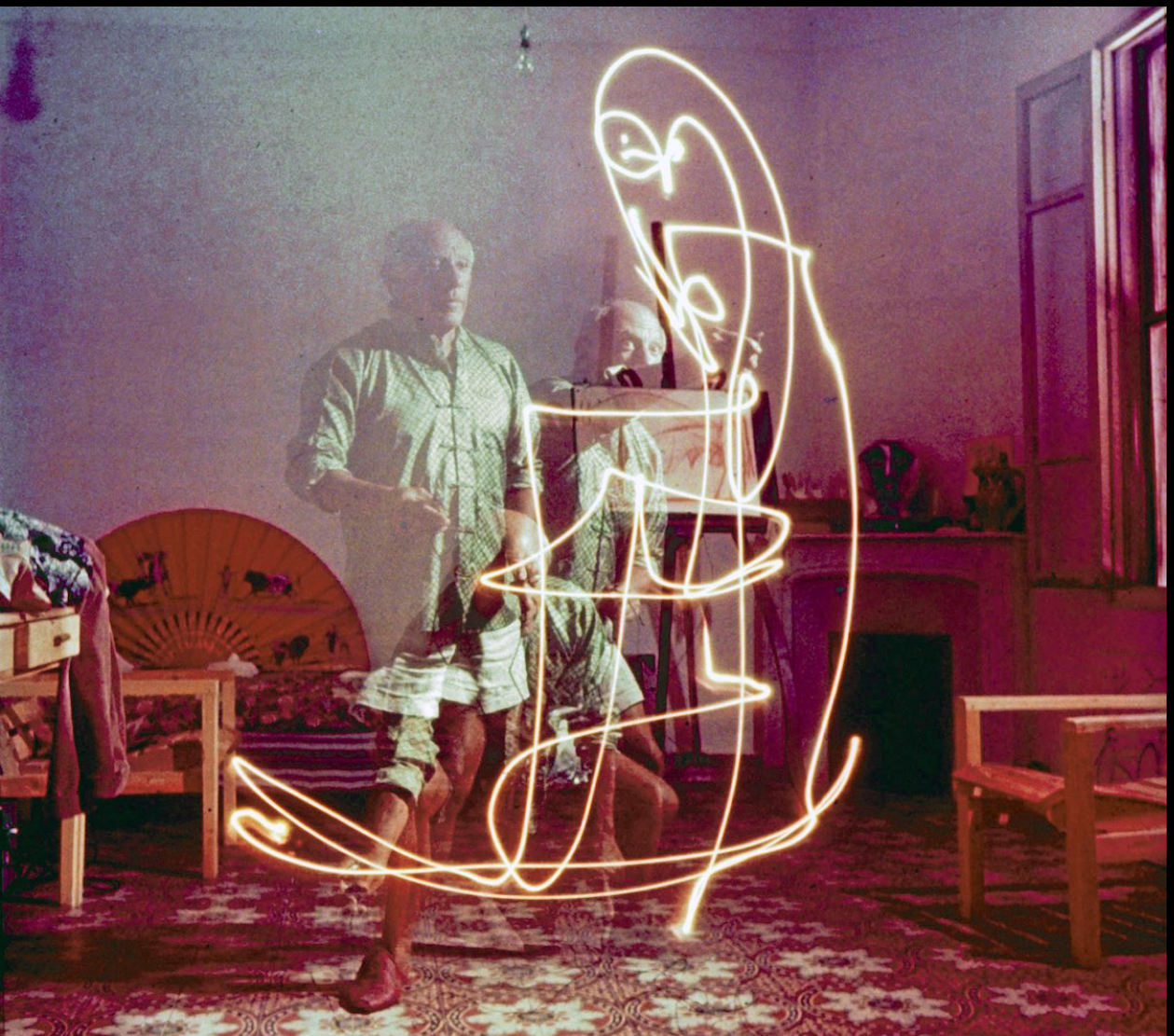


Sunset • 36 x 27 • The Tate Modern, London, United Kingdom • 2.5.2004 • f/2.8 • 1/30 sec • 640 ISO • 7 mm • Sony DSC-V1 • Jazno Francoeur

PHOTOGRAPHER GJON MILI & PICASSO, LIGHT DRAWINGS:

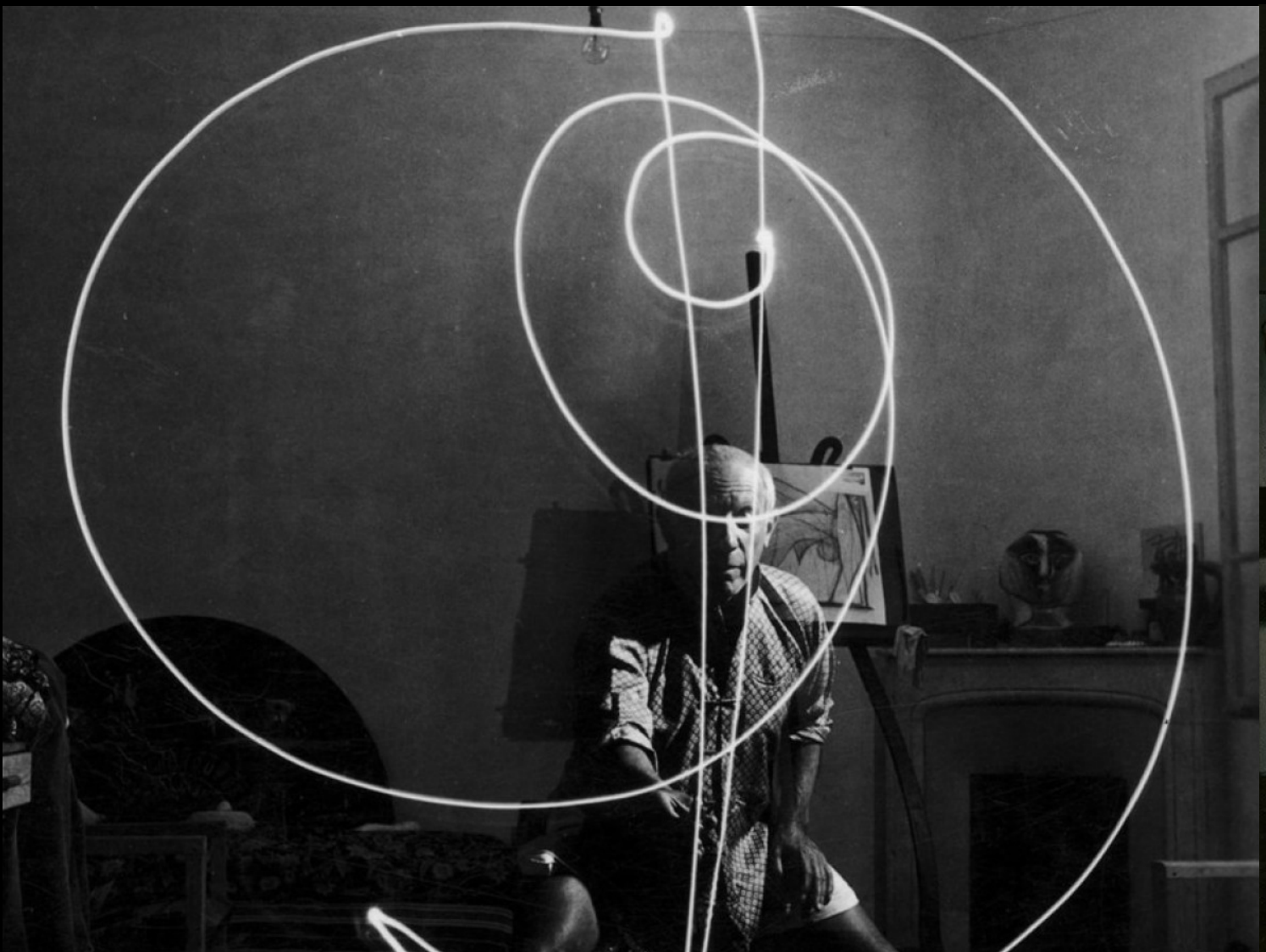
BY UTILIZING A SMALL HANDHELD ELECTRIC LIGHTBULB, MILI PHOTOGRAPHED THE ARTIST IN A DARK ROOM, WITH TWO CAMERAS — ONE POSITIONED AT THE SIDE, THE OTHER AT THE FRONT. BY LEAVING THE CAMERAS' SHUTTERS OPEN, MILI WAS ABLE TO CAPTURE PICASSO'S LIGHT MOVING THROUGH THE AIR. ***"TIME COULD TRULY BE MADE TO STAND STILL. TEXTURE COULD BE RETAINED DESPITE SUDDEN VIOLENT MOVEMENT."***

HTTPS://MAGAZINE.ARTLAND.COM/ARTISTIC-COLLABORATIONS-PABLO-PICASSO-GJON-MILI/



PHOTOGRAPHER GJON MILI & PICASSO, LIGHT DRAWINGS:

*PICASSO: **"ART IS THE ELIMINATION OF THE UNNECESSARY**. THERE IS NO ABSTRACT ART. YOU MUST ALWAYS START WITH SOMETHING. AFTERWARD YOU CAN REMOVE ALL TRACES OF REALITY."* **HTTPS://WWW.LIFE.COM/ARTS-ENTERTAINMENT/BEHIND-THE-PICTURE-PICASSO-DRAWS-WITH-LIGHT/**



SPEER & WEIDEMANN, THE LINEAR ART OF FASCISM:

"THE FEELING WAS OF A VAST ROOM, WITH THE BEAMS SERVING AS MIGHTY PILLARS OF INFINITELY LIGHT OUTER WALLS." *THE CATHEDRAL OF LIGHT WAS DESIGNED BY ARCHITECT ALBERT SPEER, IT CONSISTED OF 152 ANTI-AIRCRAFT SEARCHLIGHTS AIMED SKYWARD TO CREATE A SERIES OF VERTICAL BARS SURROUNDING THE AUDIENCE. IT WAS DOCUMENTED IN THE NAZI PROPAGANDA FILM* ***FESTLICHES NÜRNBERG****, DIRECTED BY HANS WEIDEMANN. SPEER'S ASSOCIATION WITH HITLER AND THE NAZI PARTY LATER BROUGHT HIM TO RUIN, AS HE WAS SENTENCED TO TWENTY YEARS IN PRISON AT NUREMBERG. "ONE SELDOM RECOGNIZES THE DEVIL WHEN HE IS PUTTING HIS HAND ON YOUR SHOULDER."* ***HTTPS://EN.WIKIPEDIA.ORG/WIKI/CATHEDRAL_OF_LIGHT***

LINES, AMERICAN ICONS:

JIMMY STEWART IN VERTIGO AS EXTRUDED BIREFRINGENT **DE STIJL FIBER OPTICS** IN STENBERG TWINS CONSTRUCTIVIST POSTER, STYLE OF DAIDO MORIYAMA AND WILLIAM KLEIN SHOT WITH LOMO LC-WIDE 35MM, EXPOSED FRAME CARRIAGE, LIGHT LEAKS, LOMOGRAPHY GREENSCALE XR 50-200 35MM, CARL ZEISS PLANAR 50MM F/0.7 --AR 2:1 **--SEED 1645066996 [MIDJOURNEY 5.2]**

LINES, HAMMER OF GOD:

ANDROID VOGUE MODEL, **EXTRUDED DE STIJL LAYERS**, CONTRE-JOUR, BURNING CIRCUITS, CINEMATIC COLOR, FRACTURED DIMENSIONAL MOTION BLUR, SUBSURFACE SCATTERING, RAY TRACING, STYLE OF TRON, ELYSIUM, AND SPEED RACER, VOGUE SHOOT, VAN HERPEN --AR 2:1 **[MIDJOURNEY 5.2]**

LINES, HAMMER OF GOD:

ANDROID VOGUE MODEL, **EXTRUDED DE STIJL LAYERS**, CONTRE-JOUR, **BLUE BURNING CIRCUITS**, CINEMATIC COLOR, FRACTURED DIMENSIONAL MOTION BLUR, SUBSURFACE SCATTERING, RAY TRACING, STYLE OF TRON, ELYSIUM, AND SPEED RACER, VOGUE SHOOT, VAN HERPEN --AR 2:1 **[MIDJOURNEY 5.2]**

KAREN VEGA IN PROFILE WITH **EXTRUDED DE STIJL LAYERS**, CONTRE-JOUR, **BLUE BURNING CIRCUITS**, CINEMATIC COLOR, FRACTURED DIMENSIONAL MOTION BLUR, SUBSURFACE SCATTERING, RAY TRACING, STYLE OF TRON, ELYSIUM, AND SPEED RACER, VOGUE SHOOT, VAN HERPEN, EMULSION PRINT, VISIBLE FRAME CARRIAGE --AR 2:1 **[MIDJOURNEY 5.2]**

LINES, HAMMER OF GOD:

FUTURISTIC ONYX CATHEDRAL TRANSFORMING INTO EXTRUDED DE STIJL LAYERS, **FIBER OPTICS** + SYD MEAD STYLE, CONTRE-JOUR, **GREEN BURNING CIRCUITS**, FRACTURED DIMENSIONAL MOTION BLUR, MULTIPLE EXPOSURE, RAY TRACING, STYLE OF TRON, ELYSIUM, AND SPEED RACER, CONFOCAL SCANNING ELECTRON MICROSCOPY --AR 2:1 **[MIDJOURNEY 5.2]**

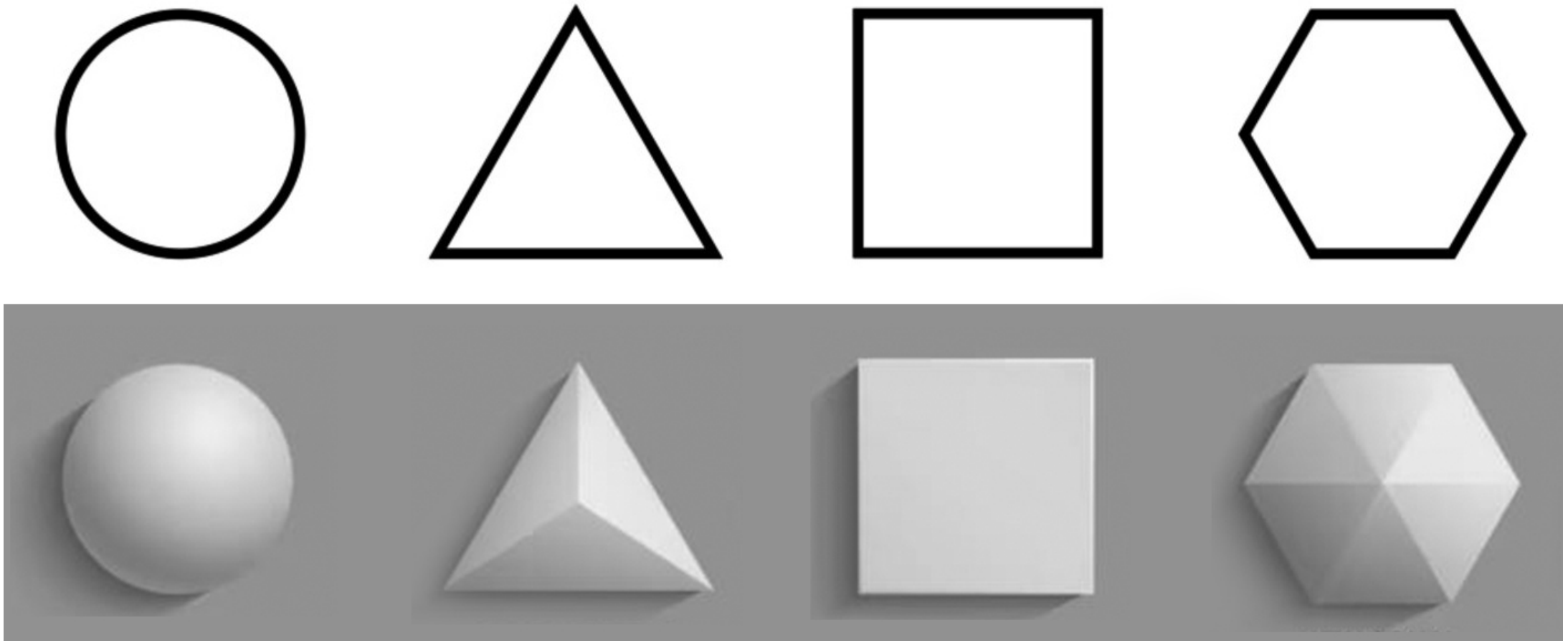
LINES, GALERIES DE L'ABSURD :

EXTREME PROFILE CLOSE-UP OF JENNY SAVILLE-INSPIRED SCHIZOPHRENIC DREAMSCAPE PORTRAIT WITH A BLUE SUBCUTANEOUS PALIMPSEST OF NATA RAJA HENNA TATTOOS DISPLAYING AN EXTRUDED **ROSHAN LATTICEWORK**, BISMUTH GIRIH TILE VENEER EMERGING FROM 2D TO 3D, REFLECTIONS, RAY TRACING, SUBSURFACE SCATTERING, BLUE BASQUIAT PALETTE, HASSELBLAD --AR 2:1 **[MIDJOURNEY NIJI 5]**

https://www.getty.edu/education/for_teachers/building_lessons/elements.html

The Elements of Shape and Form

Shape has two dimensions, height and width, and is defined by lines that outline its contour. In contrast, **form** adds depth to shape, making it three-dimensional. This quality forms the foundation for sculpture, furniture, and decorative arts. Geometric shapes and forms include precisely defined mathematical figures such as **squares, rectangles, circles, cubes, spheres, and cones**, and are frequently man-made. In contrast, organic shapes and forms are usually irregular and asymmetrical. While they commonly occur in nature, they can also be replicated in man-made designs to imitate organic aesthetics. Additionally, **patterns** arise when shapes and forms are repeated.



The Elements of Shape and Form

Shape and form stand as cornerstone elements in the realm of design. These twin elements are not merely visual components but also powerful carriers of language and psychology, contributing to the essence of meaningful artistic expression.

Shape and form possess distinct languages that convey nuanced messages. Geometric shapes like circles, squares, and triangles evoke universal associations, embedding art with comprehensible symbolism. A circle may signify unity, infinity, or cyclicality, while a square might denote stability, balance, or order. The language of form lies in its three-dimensional embodiment. A sphere evokes perfection and harmony, a cube implies solidity and structure, and a pyramid suggests hierarchy and elevation. This language guides the narrative and emotional impact of art, enabling artists to articulate ideas and evoke emotions through visually legible cues.

Beyond their language, shape and form wield psychological influence. Humans innately respond to geometric shapes due to their simplicity and familiarity, triggering emotions and associations. A triangle's dynamism awakens curiosity, a rectangle's symmetry offers tranquility, and a spiral's movement evokes energy. In the realm of form, the interplay of light and shadow on sculpted surfaces triggers an innate fascination, giving rise to tactile and visual exploration. Geometric shapes and forms contribute nuanced layers to meaningful art. Their meticulous arrangement and juxtaposition create rhythm and harmony, guiding the viewer's journey through the composition. The deliberate use of shapes and forms can mirror themes and emotions. An artwork centered around circles may mirror unity and connection, while sculptural forms might mirror the complexity of human emotions. **I incorporated a triangle, a circle, and two cubes in the completion of the sculpture to the right.**

Euclid's Altar • .91 x 1.37 • 6400 dpi • Kansas City, Missouri, USA • Fall, 1988 • Olympus OM-10 • Jazno Francoeur

https://en.wikipedia.org/wiki/Platonic_solid

The Platonic Solids

The **Platonic solids**, named after the ancient Greek philosopher Plato, are a set of five three-dimensional geometric shapes with specific properties. Plato introduced them in his philosophical dialogues as ideal, eternal forms representing the building blocks of the physical world.

The five Platonic solids are the **tetrahedron** (four equilateral triangles), **hexahedron** (cube with six square faces), **octahedron** (eight equilateral triangles), **dodecahedron** (twelve regular pentagons), and **icosahedron** (twenty equilateral triangles). These solids are unique because all their faces, edges, and angles are congruent, and they fit perfectly inside a sphere of the same size.

Their significance is profound. In science, they represent symmetry and regularity, inspiring the study of crystal structures and atomic arrangements. In philosophy, Plato associated each solid with one of the classical elements (earth, fire, air, water, and ether) and believed they embodied fundamental truths about the universe's order. In religion, they have been linked to spiritual symbolism, such as the dodecahedron's connection to the cosmos.

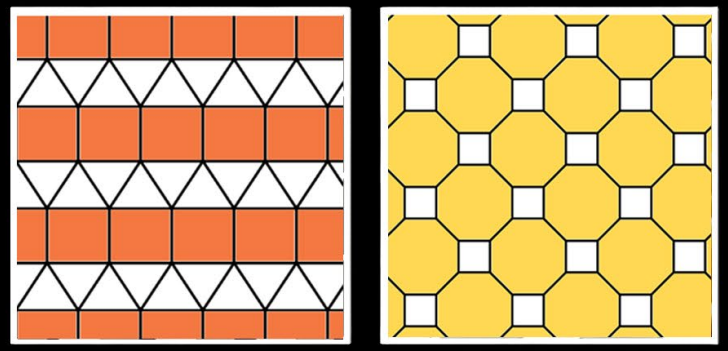
Tetrahedron	Cube	Octahedron	Dodecahedron	Icosahedron
Four faces	Six faces	Eight faces	Twelve faces	Twenty faces
				

Tessellating Shapes and Forms

Regular tessellations hold a prominent place in art due to their inherent visual appeal and simplicity. These tessellations consist of identical shapes, such as **squares, triangles, or hexagons**, that fit together seamlessly to form a repeating pattern without gaps or overlaps. This regularity brings a sense of order, symmetry, and balance to artworks. Artists have leveraged these tessellations throughout history for various purposes, from creating stunning mosaics to constructing geometric abstractions. In contrast, **aperiodic tessellations** lack strict repetition, offering more complexity and irregularity. **Semi-regular tessellations** combine multiple regular polygons, introducing diversity while maintaining some regularity. **Monohedral tessellations** use a single polygon type but may have varying angles, creating intricate, non-rectilinear patterns. **Dual tessellations** represent an interesting relationship, as they are formed by flipping the shapes of regular tessellations, resulting in interconnected patterns. **Pentagonal tessellations**, which use pentagons as their primary building blocks, stand out for their unique and intricate designs.

Regular Tessellations

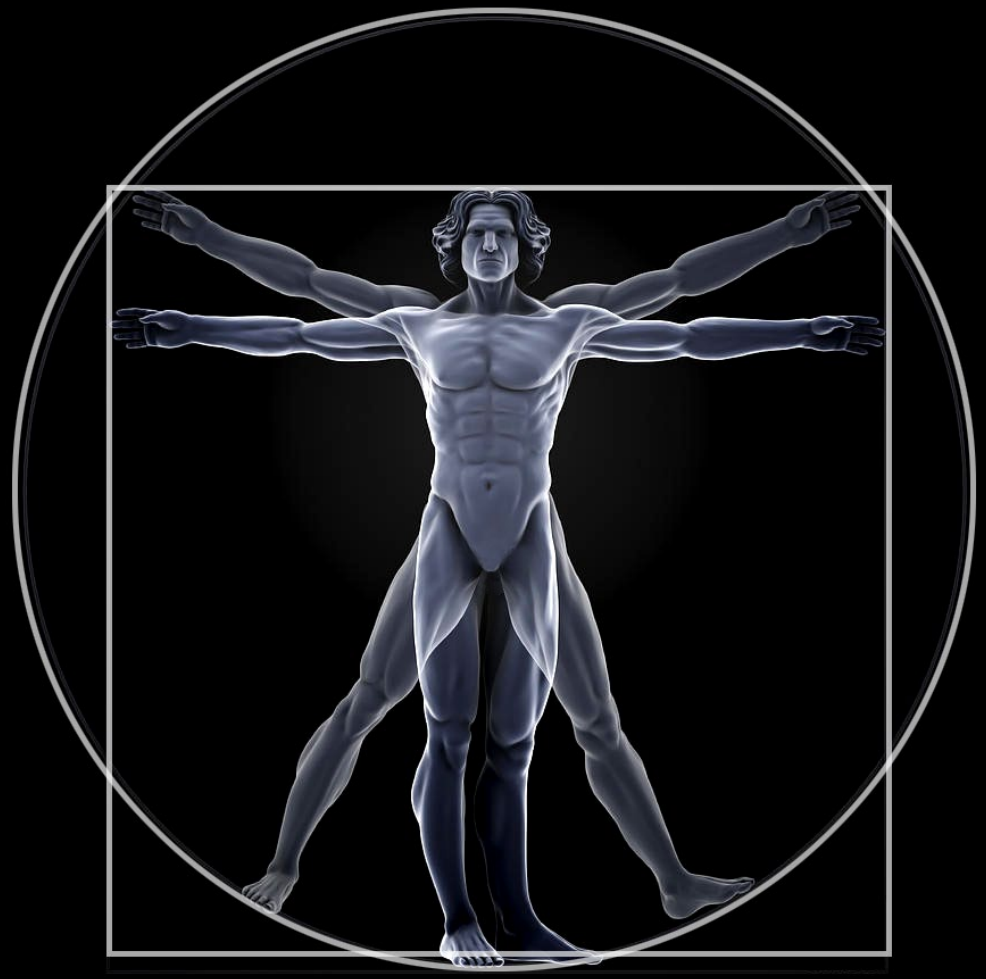
Aperiodic Tessellations

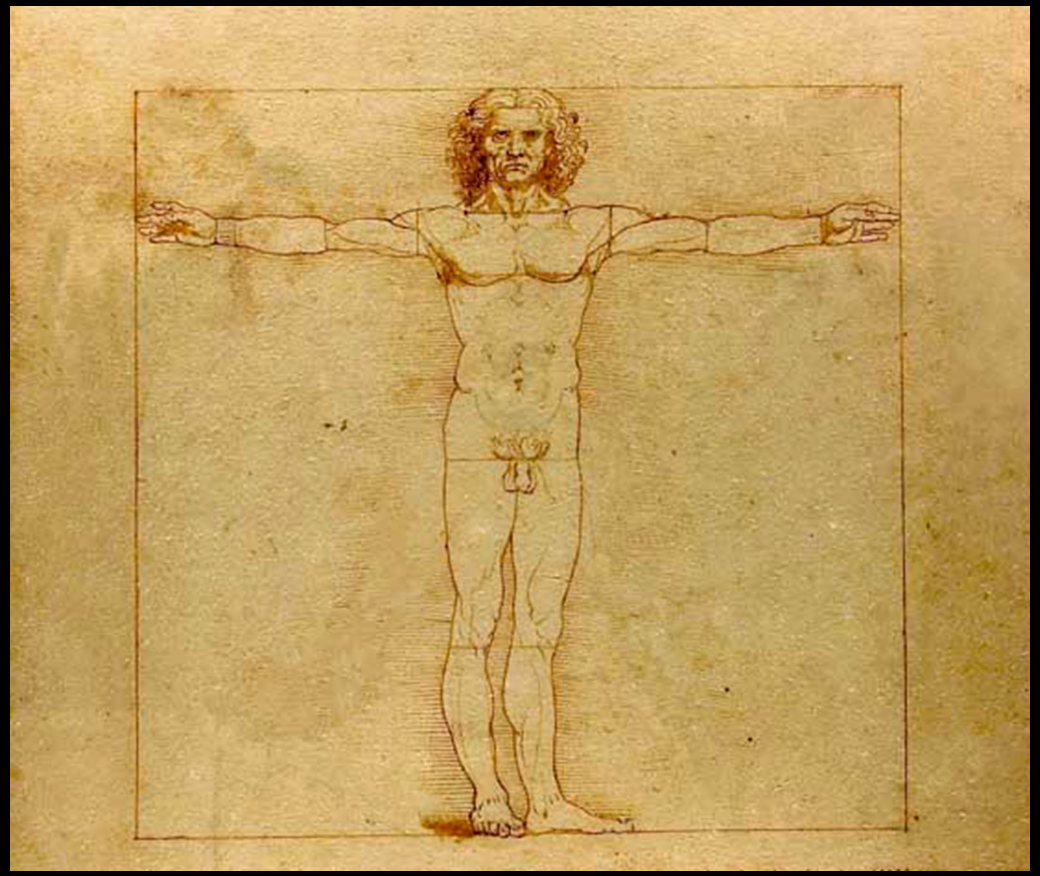


Semi-Regular Tessellations

VITRUVIUS, DA VINCI & THE GEOMETRY OF HUMANS:

"THE NAVEL IS IN THE CENTER OF THE HUMAN BODY, AND, IF IN A MAN LYING WITH HIS FACE UPWARD, AND HIS HANDS AND FEET EXTENDED, FROM HIS NAVEL AS THE CENTER, A ***CIRCLE*** *BE DESCRIBED, IT WILL TOUCH HIS FINGERS AND TOES. IT IS NOT ALONE BY A CIRCLE, THAT THE HUMAN BODY IS THUS CIRCUMSCRIBED, AS MAY BE SEEN BY PLACING IT WITHIN A* ***SQUARE.*** *FOR MEASURING FROM THE FEET TO THE CROWN OF THE HEAD, AND THEN ACROSS THE ARMS FULLY EXTENDED, WE FIND THE LATTER MEASURE EQUAL TO THE FORMER; SO THAT LINES AT RIGHT ANGLES TO EACH OTHER, ENCLOSING THE FIGURE, WILL FORM A* ***SQUARE.****"* ***HTTPS://WWW.EXPLORINGART.CO/VITRUVIAN-MAN-IMPORTANCE/***





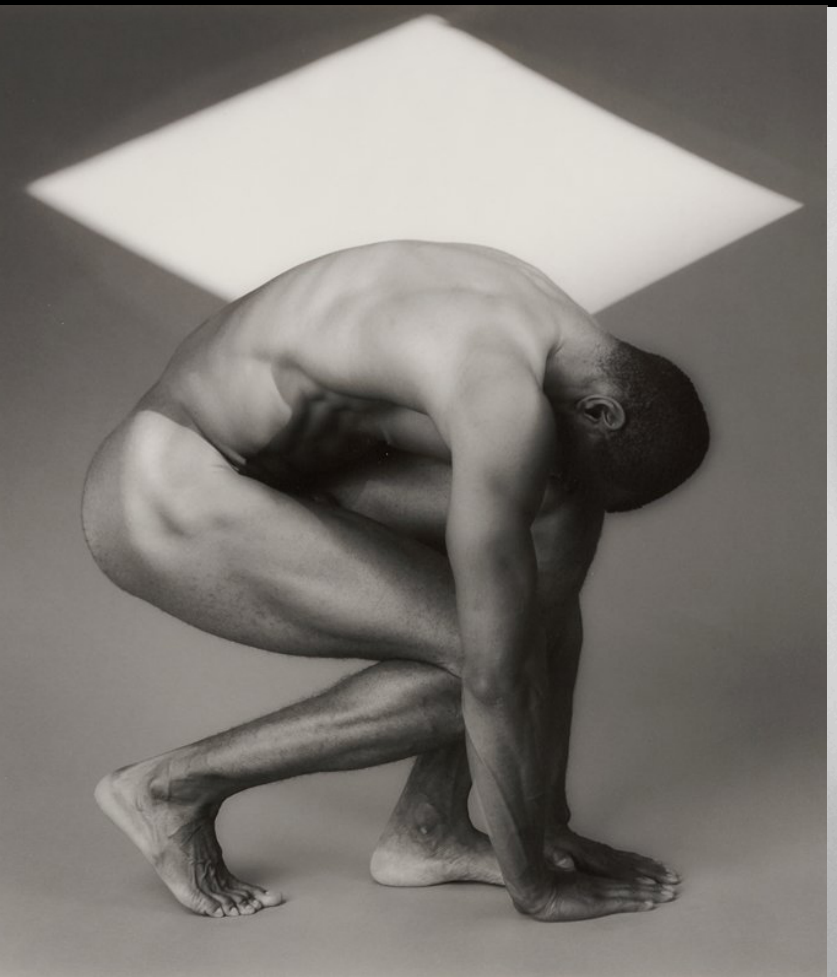
ROBERT MAPPLETHORPE, FIGURATIVE SHAPES & FORMS:

"I AM OBSESSED WITH BEAUTY...WHEN I WORK, AND IN MY ART, I HOLD HANDS WITH GOD. *TO MAKE PICTURES BIG IS TO MAKE THEM MORE POWERFUL."*

HTTPS://EN.WIKIPEDIA.ORG/WIKI/ROBERT_MAPPLETHORPE

ROBERT MAPPLETHORPE, FIGURATIVE SHAPES & FORMS:

"I LIKE TO LOOK AT PICTURES, ALL KINDS. AND ALL THOSE THINGS YOU ABSORB COME OUT SUBCONSCIOUSLY ONE WAY OR ANOTHER. YOU'LL BE TAKING PHOTOGRAPHS AND SUDDENLY KNOW THAT YOU HAVE RESOURCES FROM HAVING LOOKED AT A LOT OF THEM BEFORE. THERE IS NO WAY YOU CAN AVOID THIS. BUT THIS KIND OF SUBCONSCIOUS INFLUENCE IS GOOD, AND IT CERTAINLY CAN WORK FOR ONE. IN FACT, ***THE MORE PICTURES YOU SEE, THE BETTER YOU ARE AS A PHOTOGRAPHER."*** ***HTTPS://EN.WIKIPEDIA.ORG/WIKI/ROBERT_MAPPLETHORPE***



REBECCA HORN, WEARABLE SHAPES & FORMS:

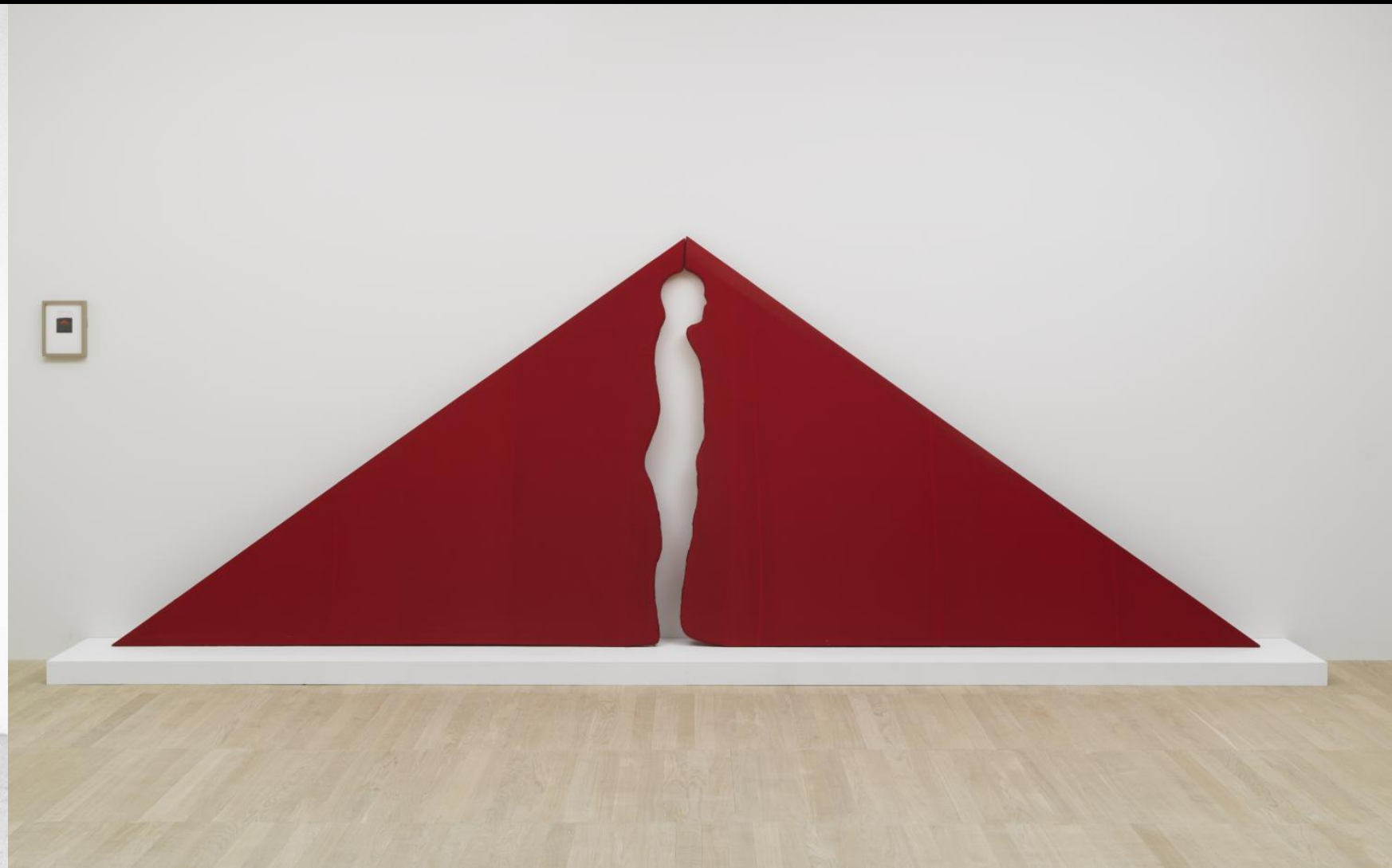
REBECCA HORN'S BODY EXTENSIONS WORK INCLUDED MANY PERFORMANCES FOR FILM, THAT WERE RE-PERFORMED AT TIMES. BUILDING COSTUMES THAT ALLOWED FOR OBJECTS TO PROTRUDE FROM HER BODY, SHE MOVED ABOUT WEARING THESE OBJECTS IN ATTEMPT TO ***"EXPLORE THE EQUILIBRIUM BETWEEN BODY AND SPACE…THE TRANSFORMATION OF THE EXPERIENCE: THAT IS PURE ART. WEAR YOUR ART."***

HTTPS://WWW.STIRWORLD.COM/SEE-FEATURES-WEAR-YOUR-ART-SAYS-REBECCA-HORN-S-EXHIBITION-AT-TATE-MODERN-LONDON

REBECCA HORN, WEARABLE SHAPES & FORMS:

"LOOKING BACK AT MY FIRST PIECES YOU ALWAYS SEE A KIND OF COCOON, WHICH I USED TO PROTECT MYSELF. THIS INTIMACY OF FEELING AND COMMUNICATION WAS A CENTRAL PART OF MY PERFORMANCES. ***MY PERFORMANCES STARTED OUT AS BODY SCULPTURES."***

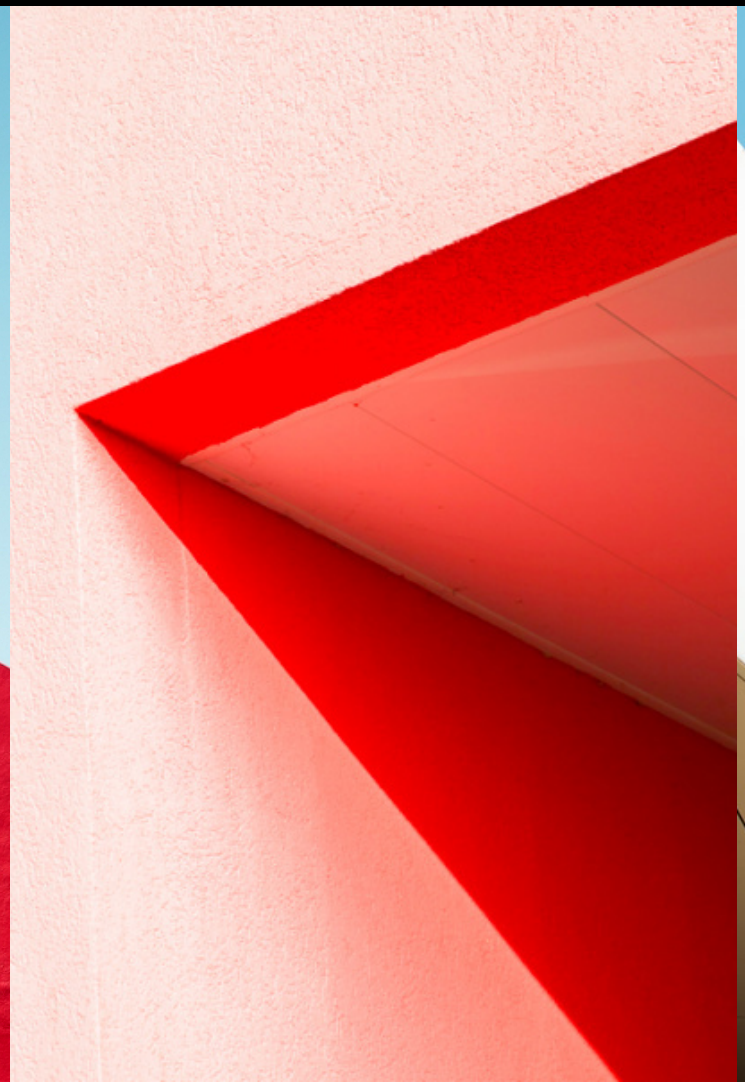
HTTPS://WWW.THEARTSTORY.ORG/ARTIST/HORN-REBECCA/



MATTHIEU VENOT, ARCHITECTURAL SHAPES & FORMS:

THE FLAT, GRAPHIC, SIMPLE AND STREAMLINED ARCHITECTURE SHOTS BY MATTHIEU VENOT ARE LARGELY OF THE PICTURESQUE BREST. WANDERING THE FRENCH CITY BY BICYCLE. DRAWN TO COLOR AND FORM, MATTHIEU SEEKS OUT STREET CORNERS, HIDDEN BUILDINGS AND SIGHTS OF INTEREST. ***"I THINK ANY GOOD PHOTOGRAPH IS TIMELESS. MY ADVICE TO OTHERS WOULD BE DON'T FOLLOW TRENDS JUST FOLLOW YOUR HEART."***

HTTPS://WWW.CREATIVEBOOM.COM/INSPIRATION/MATTHIEU-VENOT-PLAYS-IT-SAFER-WITH-GEOMETRIC-CANDY-COLOURED-ABSTRACT-PHOTOGRAPHS/



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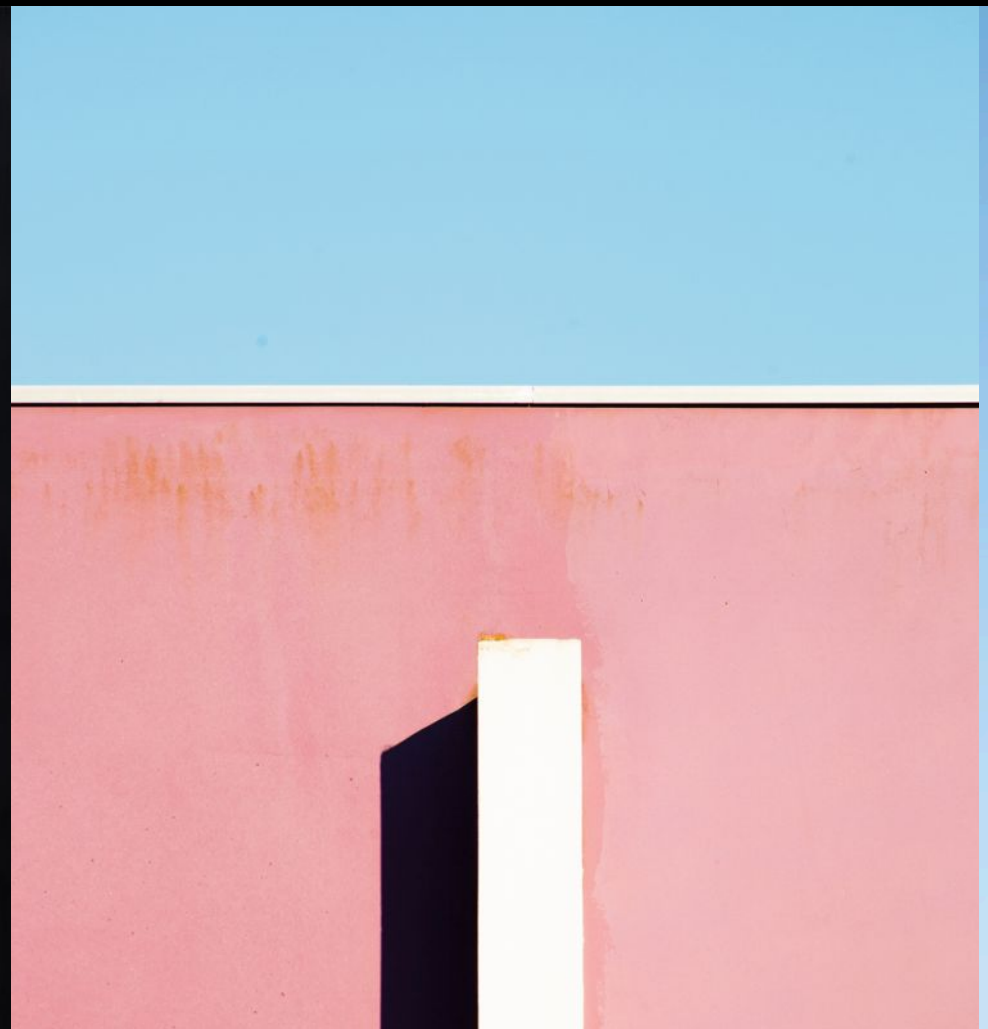
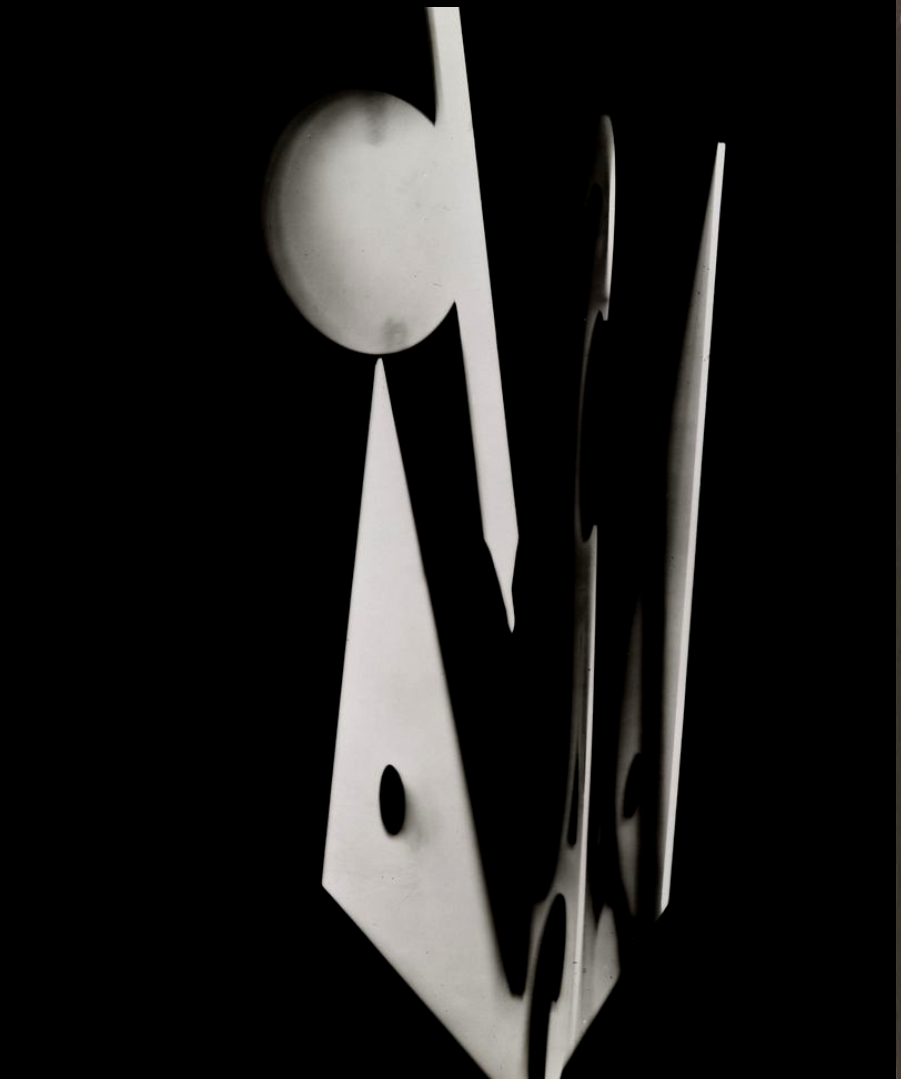


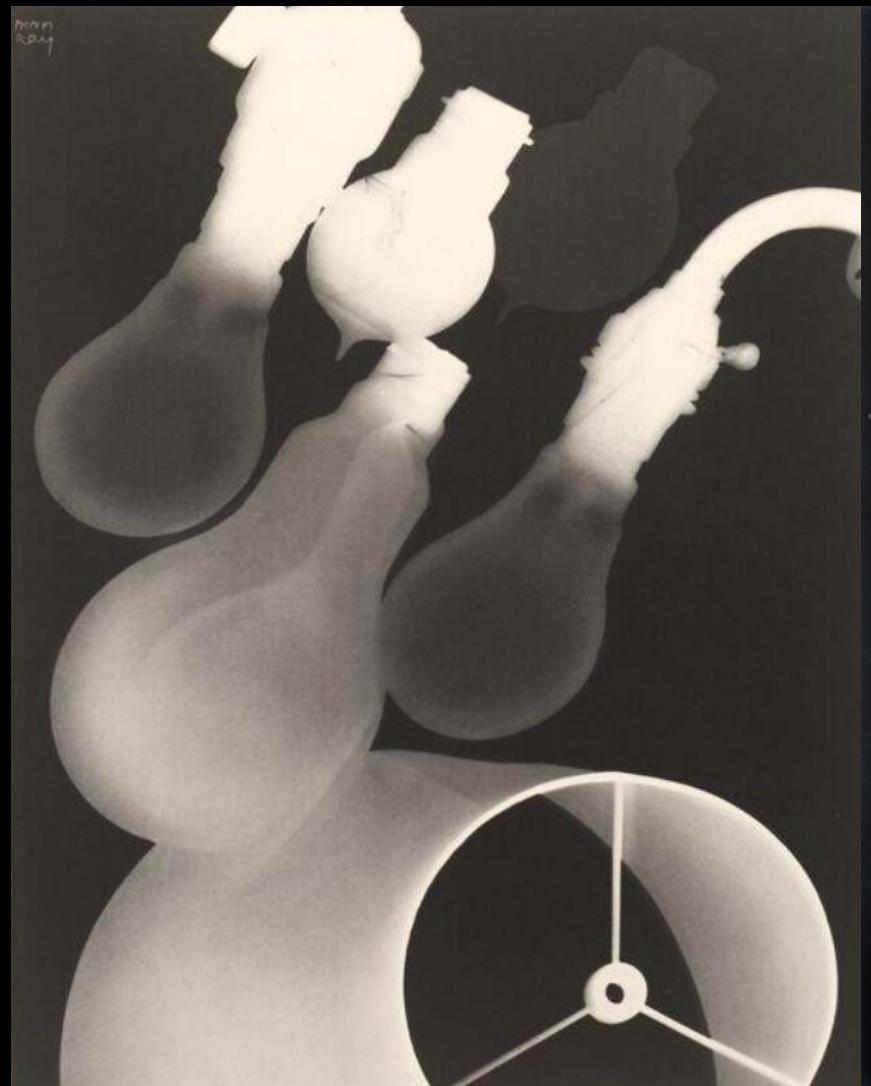
LEWIS HINE, INDUSTRIAL SHAPES & FORMS:

"IN THE LAST ANALYSIS, GOOD PHOTOGRAPHY IS A QUESTION OF ART." HTTPS://IPHF.ORG/INDUCTEES/LEWIS-HINE/

MAN RAY, ABSTRACT SHAPES & FORMS:

"I WOULD PHOTOGRAPH AN IDEA RATHER THAN AN OBJECT, A DREAM RATHER THAN AN IDEA. I DO NOT PHOTOGRAPH NATURE. I PHOTOGRAPH MY VISIONS…TO MAKE A PICTURE YOU NEED A CAMERA, A PHOTOGRAPHER, AND ABOVE ALL A SUBJECT. IT IS THE SUBJECT THAT DETERMINES THE INTEREST OF THE PHOTOGRAPH. A CAMERA ALONE DOES NOT MAKE A PICTURE. YOU DON'T ASK A WRITER WHAT TYPEWRITER HE USES. ***IS PHOTOGRAPHY AN ART? THERE IS NO POINT IN TRYING TO FIND OUT IF IT IS AN ART. ART IS OLD-FASHIONED. WE NEED SOMETHING ELSE."*** *HTTPS://EN.WIKIPEDIA.ORG/WIKI/MAN_RAY*



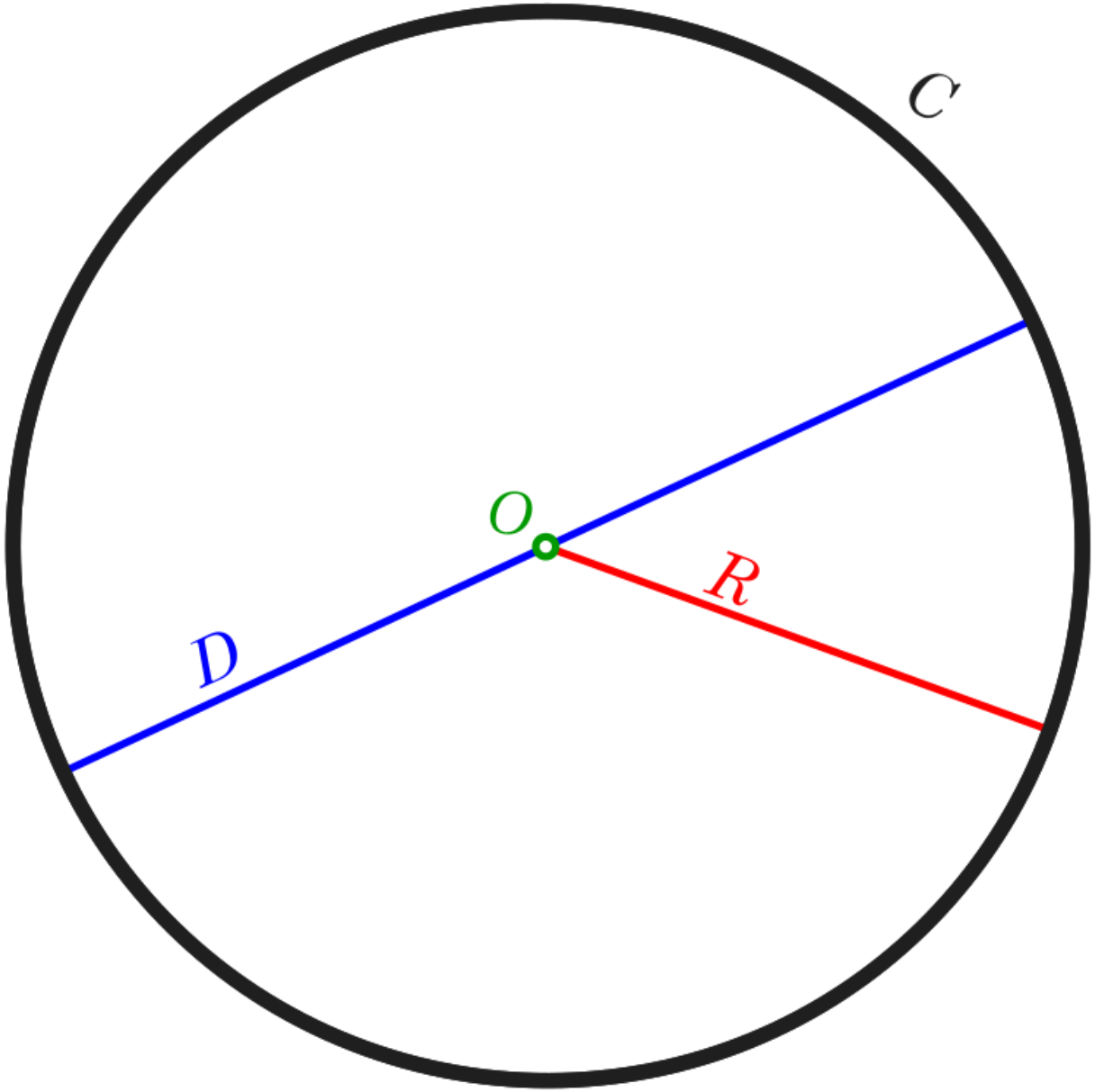


The Circle

The **circle**, an elemental shape, transcends cultural boundaries and epochs, carrying profound symbolism and artistic significance throughout history. From its ancient origins to its modern interpretations, the circle's rich history is intertwined with psychological implications and innovative applications by prominent artists, including photographers.

In antiquity, the circle held sacred significance, representing unity, eternity, and the cyclical nature of life. It adorned religious artifacts, architecture, and artworks, signifying divinity and cosmic order across cultures. As a complete and continuous form, the circle embodies a sense of harmony and perfection.

Psychologically, the circle evokes feelings of wholeness, balance, and unity. It triggers an innate sense of completion, resonating with human perception of the familiar and the natural. Its endless curvature draws the eye in a continuous loop, creating a soothing visual experience. Its center-focused nature offers a focal point that is both grounding and dynamic.



The Circle

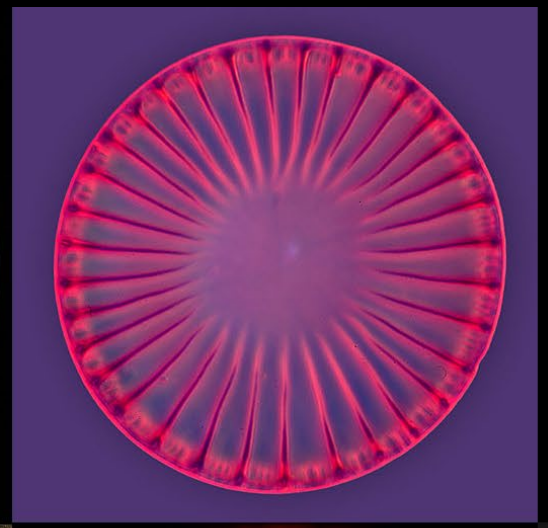
Prominent artists have harnessed the **circle's power** to convey diverse concepts. Wassily Kandinsky, a pioneer of abstraction, employed circles in his paintings to evoke spiritual harmony and the universe's interconnectedness. Bridget Riley's op art utilized concentric circles to produce optical illusions, engaging viewers in dynamic visual experiences. In photography, Man Ray's exploration of the solarization technique introduced circular forms, blurring the line between representation and abstraction.

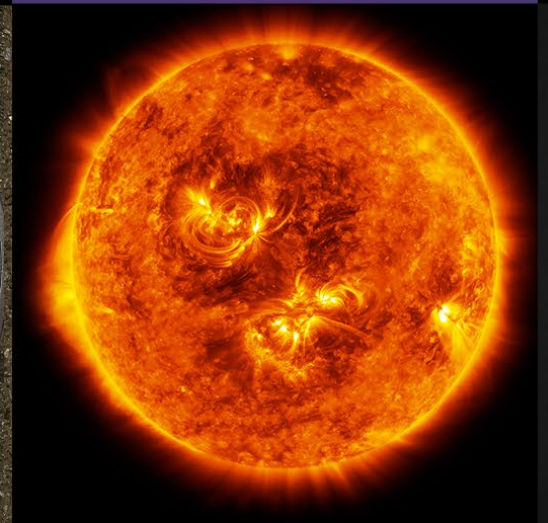
In contemporary photography, artists continue to utilize the circle's symbolism. Sally Mann's series "What Remains" features circular frames, engaging viewers in intimate reflections on mortality and memory. Rinko Kawauchi's "Ametsuchi" incorporates circular imagery to explore the cosmos, nature, and human existence.

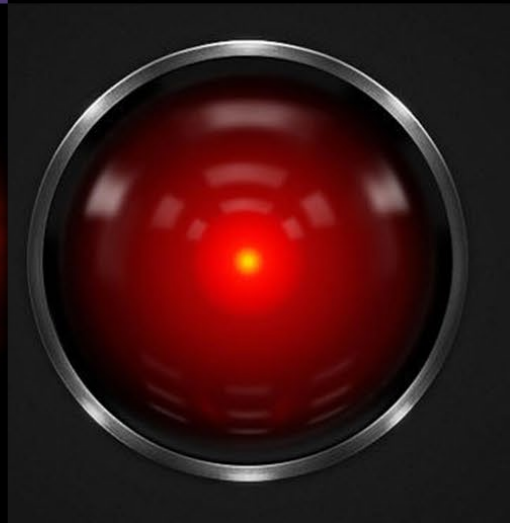
Green Lotus • 3932 x 2364 • Chiang Mai, Thailand • 8.8.2018 • f/3.5 • 1/250 sec • 100 ISO • 28 mm • Nikon DF • J. Francoeur

The Power of the Circle

The circle, with its perfect symmetry and unending curvature, serves as a fundamental template upon which all shapes in the universe are built. From the microcosm to the macrocosm, its ubiquity is astounding. At the smallest scales, within the realm of atoms and subatomic particles, the electron orbits its nucleus in a circular motion, following the principles of quantum mechanics. In the biological world, the circular shape can be found in the cross-sections of plant stems, tree rings, and even the spirals of seashells, a testament to the circle's role in growth and form. Venturing into the vastness of the cosmos, galaxies often assume a circular or spiral shape, driven by the interplay of gravitational forces.







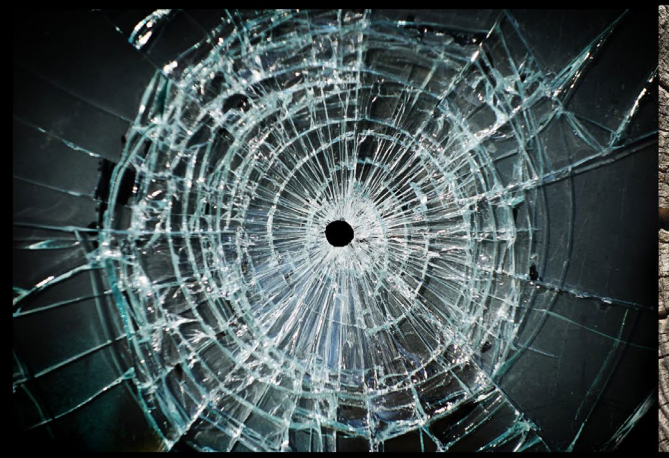
The Circle and Radiating Patterns in Nature

The common thread weaving through seemingly disparate **radial phenomena,** despite differences in materials, forces, and scales, lies in the fundamental principle of self-organization within dynamic systems. Nature's innate propensity to achieve equilibrium and optimize resource utilization is at the heart of these visually similar patterns. Consider the radial spider's web—a delicate masterpiece constructed by a spider. It's formed through instinctive processes driven by the spider's need for survival and efficient prey capture. Similarly, radial patterns in a tree trunk result from the growth rings formed as the tree adapts to changing environmental conditions, optimizing nutrient distribution.

Circular networks created by a bullet's impact on a windshield demonstrate the impact of external forces, dissipating energy to minimize damage. In contrast, a helicopter's rotor blades induce radial networks in water, as the motion generates outward ripples, showcasing fluid dynamics and symmetry.

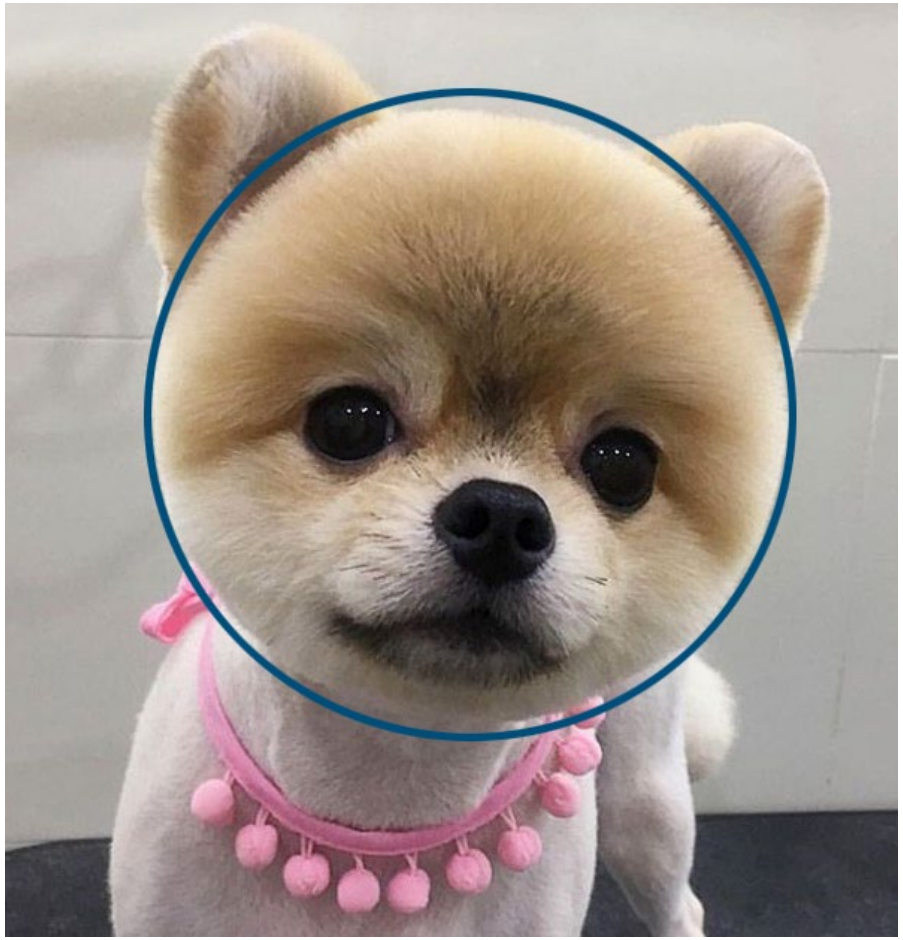
A microwave-melted CD and its radial patterns reflect how heat diffuses through the plastic, driven by material properties & electromagnetic radiation.

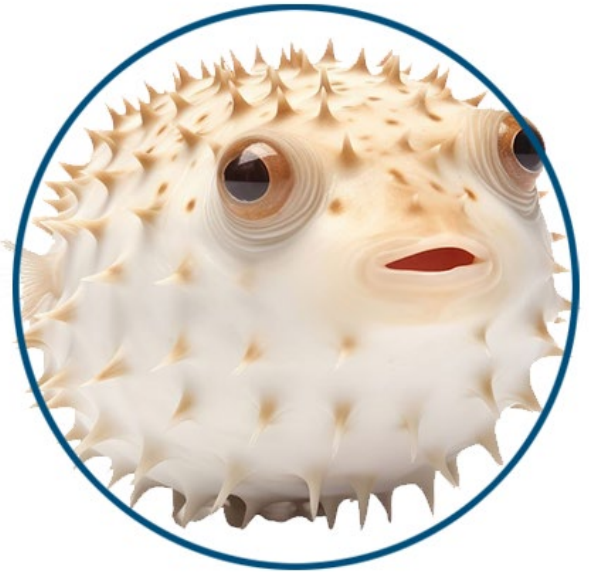
In all these cases, the systems involved—whether biological, geological, mechanical, or physical—exhibit self-organizing behaviors driven by gradients and external factors.



The Shape of Safety

Unlike triangles, with their sharp angles and pointed vertices, **circles lack any aggressive or jarring elements.** Their smooth and continuous curves create a sense of harmony and comfort, resembling the softness of nature's contours. The absence of abrupt corners in circles minimizes any potential for intimidation or threat. Circles are often associated with unity and wholeness, mirroring the cyclical patterns in life. This symbolism fosters a feeling of inclusivity and safety. In design, art, and psychology, circles are commonly employed to evoke feelings of warmth, connection, and innocence. These qualities collectively contribute to the non-threatening nature of circles, making them inviting symbols that resonate positively with our perception and emotions.

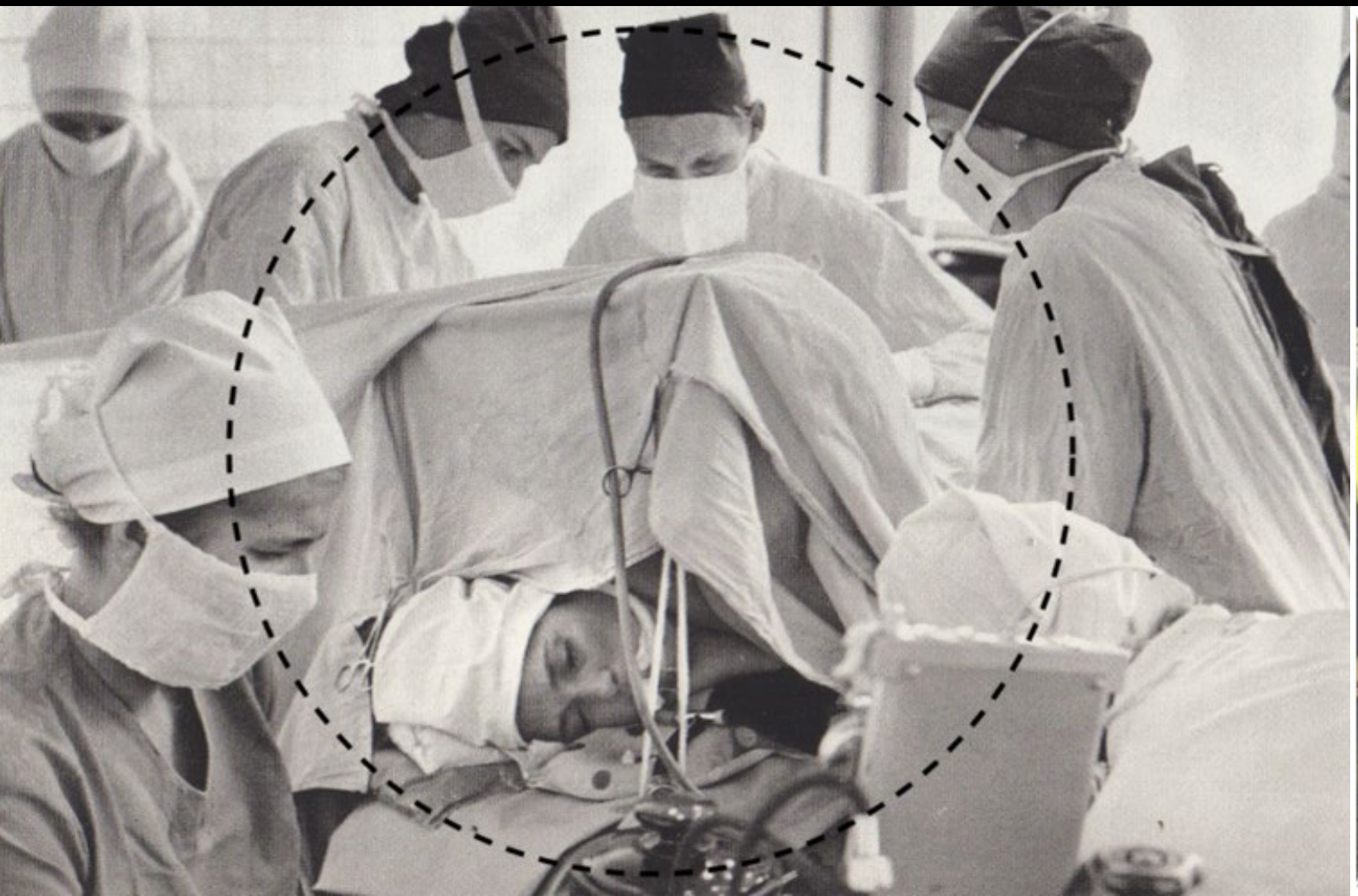




Circular Composition

https://www.the-art-of-composition.com/circular-composition.html

Circular composition is a technique employed by accomplished artists to skillfully unify specific elements within a drawing, painting, or photograph. This design approach is readily recognizable and plays a crucial role in guiding viewers' eyes through the artwork. It's important to note that circular composition need not be strictly literal; it can also be subtly implied. To the left is a photograph by Henri Cartier-Bresson; to the right is a painting by Raphael ('The Deposition') designed using circular composition and the 14-line armature of the rectangle.



Circular Composition

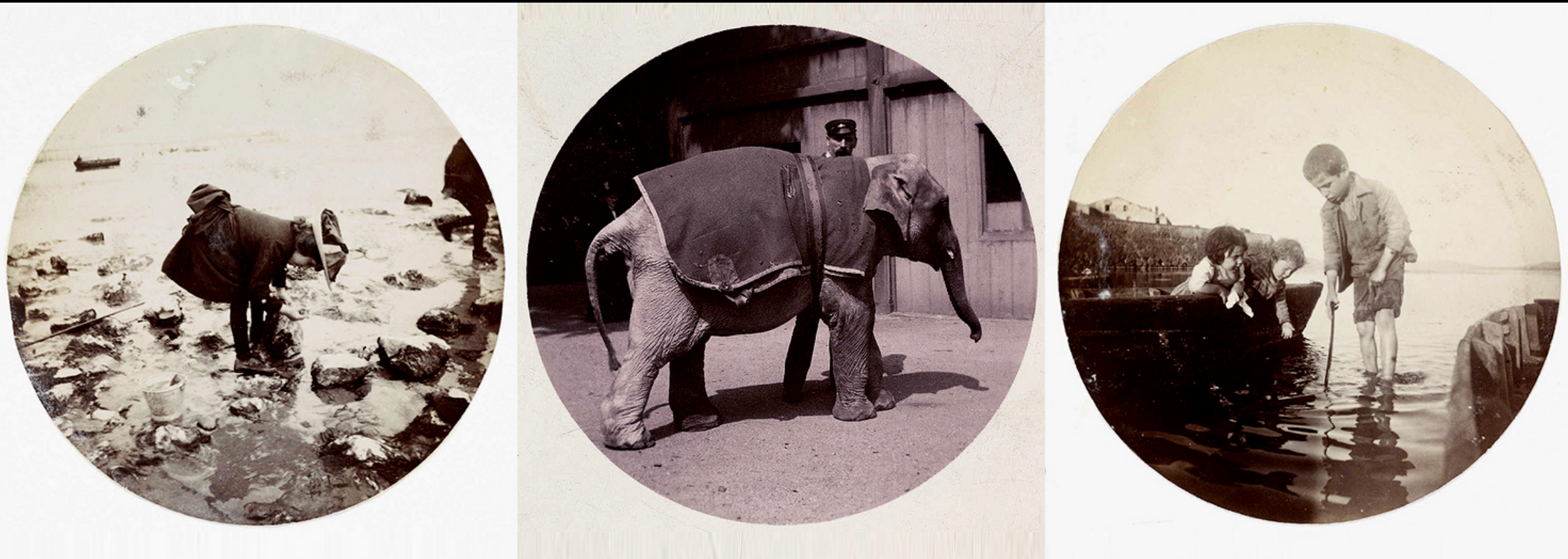
https://www.the-art-of-composition.com/circular-composition.html

In Anthony van Dyck's painting "Christ Crowned with Thorns" (below middle), **the figures are enclosed within multiple circles**, guiding the viewer's gaze through the canvas repeatedly before exiting. William Bouguereau demonstrates circular composition in the image to the left. An essential point to consider is that circular composition need not always be explicit; it can be suggested. In the painting "Whistler's Mother" by James McNeill Whistler (to the right), observe how the artist employs rectangular shapes to establish a circular flow. Picture frames on the wall and curtains on the left guide the viewer's gaze inward, reinforcing the intended circular composition.

The Circular Format

https://lensgarden.com/light/when-photographs-were-round/
https://www.thevintagenews.com/2016/03/11/kodak-no-1-circular-snapshots/

The earliest Kodak photographs were printed in a **circular format,** but later models produced a rectangular image, usually printed small enough to be held in the palm of the hand. Early processes such as Daguerreotype and tintype were often framed in circular frames or placed into cases with round or oval shaped framework. In part, this was to hide the edges of the glass or metal plates where the images showed the imperfections caused by the hand-made production techniques of image processing of the period. In the beginning of the snapshot era, the simple meniscus lenses that were used were only sharp in the central portion of the projection. As a result the camera produced images with soft out-of-focus corners. To solve the problem, George Eastman's original version of the Brownie box camera incorporated a mask that produced round images. The round mask was placed in front of the film plane, which blocked the light from the extreme areas of the projected image. **Round framing is often referred to as tondo**. Tondo in the arts means a circular painting or sculpture. A tondo is a Renaissance term for a circular work of art, which is usually a painting or a sculpture. The tondo shape was used in many religious paintings, painted vases, and as a design element in architecture.

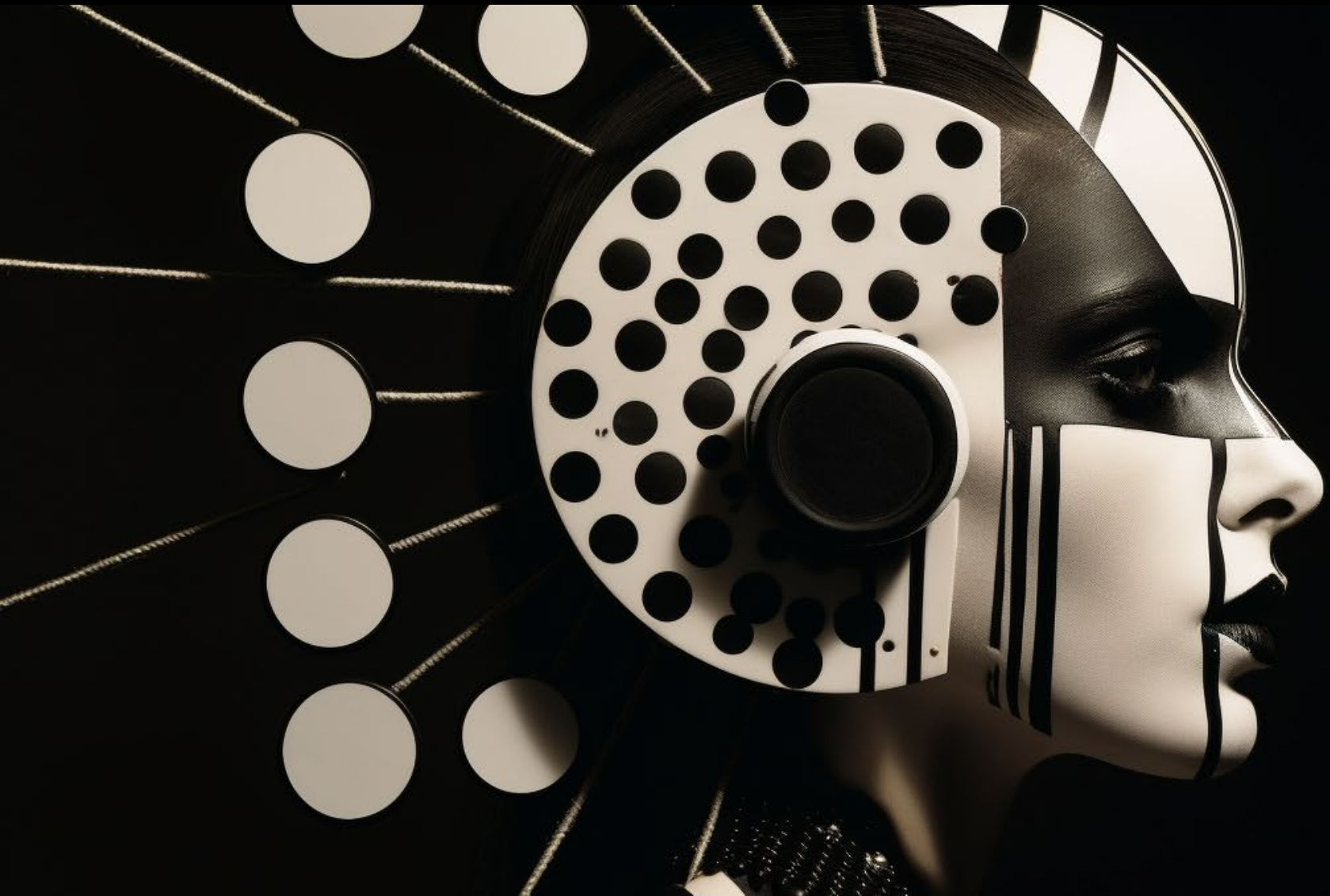


CIRCULAR SHAPES, KANDINSKY & JOAN MIRÓ FANTASIAS:

UNDERWATER VOLCANO + **KANDINSKY + JOAN MIRO** + RELATIONAL SYMBIOTIC FUNDAMENTAL PERTURBATIONS, FRACTAL TESSELLATIONS, OPTICAL ILLUSIONS IN HOLOGRAPHIC QUANTUM FOAM, QUASI-PARTICULATE NATURE OF CRYSTALLINE REALITY, EVER-SHIFTING LANDSCAPE OF INDESCRIBABLE SHAPES AND VIBRANT COLORS --AR 3:2 **[MIDJOURNEY 4]** **[INSPIRED BY THE PROMPTS OF SAKEEB RAHMAN]**

CIRCULAR SHAPES, AVANT-GARDE SERIES:

PROFILE VIEW OF VOGUE MODEL WEARING GEOMETRICAL ARCHITECTURAL AVANT-GARDE COSTUME COMPRISED OF **CIRCLES,** STYLE OF MAPPLETHORPE AND JOEL PETER WITKIN, BLACK AND WHITE, INTENSE GAZE, SPLIT LIGHT --AR 2:1 **[MIDJOURNEY 5.2]**

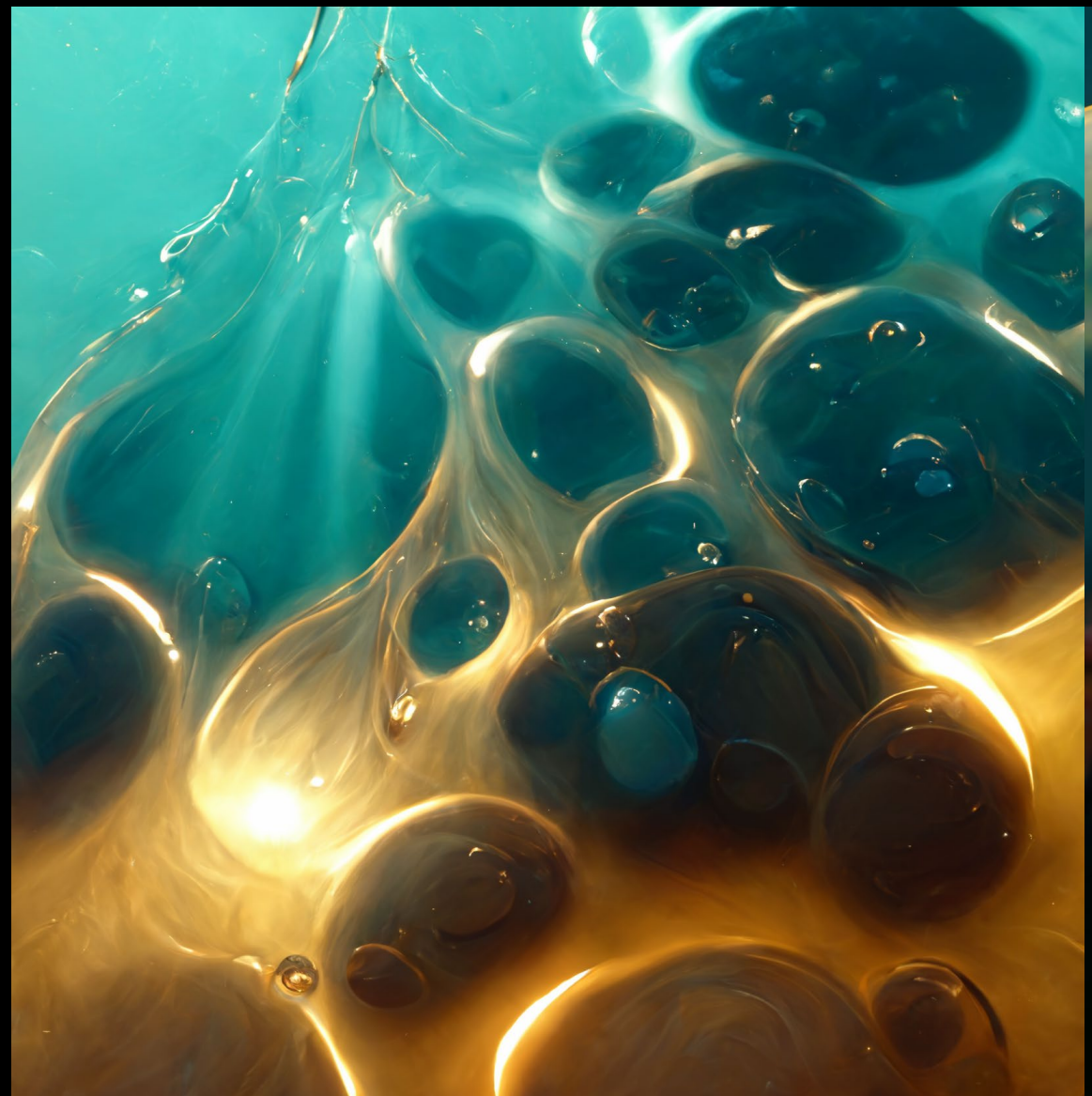


CIRCULAR SHAPES, AVANT-GARDE SERIES:

REBECCA HORN WEARING **CIRCULAR DEVICE**, STYLE OF AVEDON, BLACK AND WHITE, INTENSE GAZE, SPLIT LIGHT --AR 2:1 **[MIDJOURNEY 5.2]**

CIRCULAR FORMS, TIFFANY + GAUDI GLASS ART SPLASHES:

DETAILED WATER SPLASH IN THE STYLE OF TIFFANY AND GAUDI, GLOWING WATER SPRAY AND **DROPLETS,** CAUSTICS, REFLECTIONS, CHIAROSCURO, SPECULAR HIGHLIGHTS, RAY TRACING, LOOKUP UP TOWARD SUN, CANON 5, BACKLIT, COOL PALETTE, FORCED PERSPECTIVE **[MIDJOURNEY 4]**



CIRCULAR SHAPES & FORMS, THE LAKHIYANA:

MANOJ CHOPRA IN FUTURISTIC KATHAKALI SUIT IN A **DOME** OF COLORFUL MAGNETIC LIQUID LAVA IN THE STYLE OF CHIHULY EXPLODING OVER A SUPERHYDROPHOBIC BIOLUMINESCENT CHLADNI PLATE AS ENTERTWINED KÁRMÁN VORTEX STREETS INTERMINGLE WITH UNDULATING CAVITATION BUBBLES, MOTION BLUR, OPTIMIZED PHOTON CAPTURE --AR 3:2 **[MIDJOURNEY 4]**

EXTREME CLOSE-UP OF HALLUCINATORY PALIMPSEST OF UNDULATING **BUBBLES** CONTAINING TINA AMBANI AND SON, NEBULA EXPLODING INTO A FIELD OF AMBER DROPLETS OF LIGHT AND STRETCHED BANDS OF COLOR, OPTIMIZED PHOTON CAPTURE, GLOBAL ILLUMINATION --AR 2:3 **[MIDJOURNEY 4]**

CIRCULAR FORMS, THE LAKHIYANA:

A ROTATING **SPHERE** SUSPENDED FROM THE MIDDLE OF THE DOME COMPRISED OF INTERLOCKING GEARS LIKE A KINETIC PUZZLE SUSPENDED IN A HALL THAT RESEMBLES A FUTURISTIC PENDENTIVE STRUCTURE WITH A LARGE GOLD DOME WHOSE MARBLE VAULTS ARE LATTICED WITH HONEYCOMB DESIGNS, CHIAROSCURO --AR 3:2 **[MIDJOURNEY 4]**

A GREAT HALL, A FUTURISTIC PENDENTIVE STRUCTURE WITH A LARGE GOLD DOME WHOSE MARBLE VAULTS ARE LATTICED WITH INTERLOCKING HONEYCOMB DESIGNS, A **SPHERE** SUSPENDED FROM THE MIDDLE OF THE DOME COMPRISED OF INTERLOCKING RINGS, DRAMATIC PERSPECTIVE, CHIAROSCURO --AR 3:2 **[MIDJOURNEY 4]**

CIRCULAR FORMS, THE LAKHIYANA:

SUPER-MASSIVE TELEPORTATION VAULT COMPRISED OF ROTATING SERIES OF BLACK GEAR-LIKE RINGS ROTATING AROUND A BLACK **SPHERE** CONNECTED TO TEN SMALLER GATES TO OTHER WORLDS, TEN METERS HIGH, MILLIONS OF BURNING CIRCUITS, ELECTRICAL BURSTS, HUD DISPLAY, SANSKRIT HOLOGRAMS, BIRD'S EYE VIEW, STYLE OF GIGER, PHOSPHORESCENT TUBING, RAY TRACING --AR 2:1 **[MIDJOURNEY 4]**

FUTURISTIC **HALO-LIKE CIRCULAR HUD DISPLAY** WITH BLUE HOLOGRAPHIC SANSKRIT SYMBOLS, 85MM, SHARP-FOCUS, INTRICATELY-DETAILED, DIFFUSE-BACK-LIGHTING, LOW-CONTRAST, HIGH-SHARPNESS --AR 3:2 **[MIDJOURNEY 4]**

CIRCULAR FORM, THE QUANTUM MUSEUM:

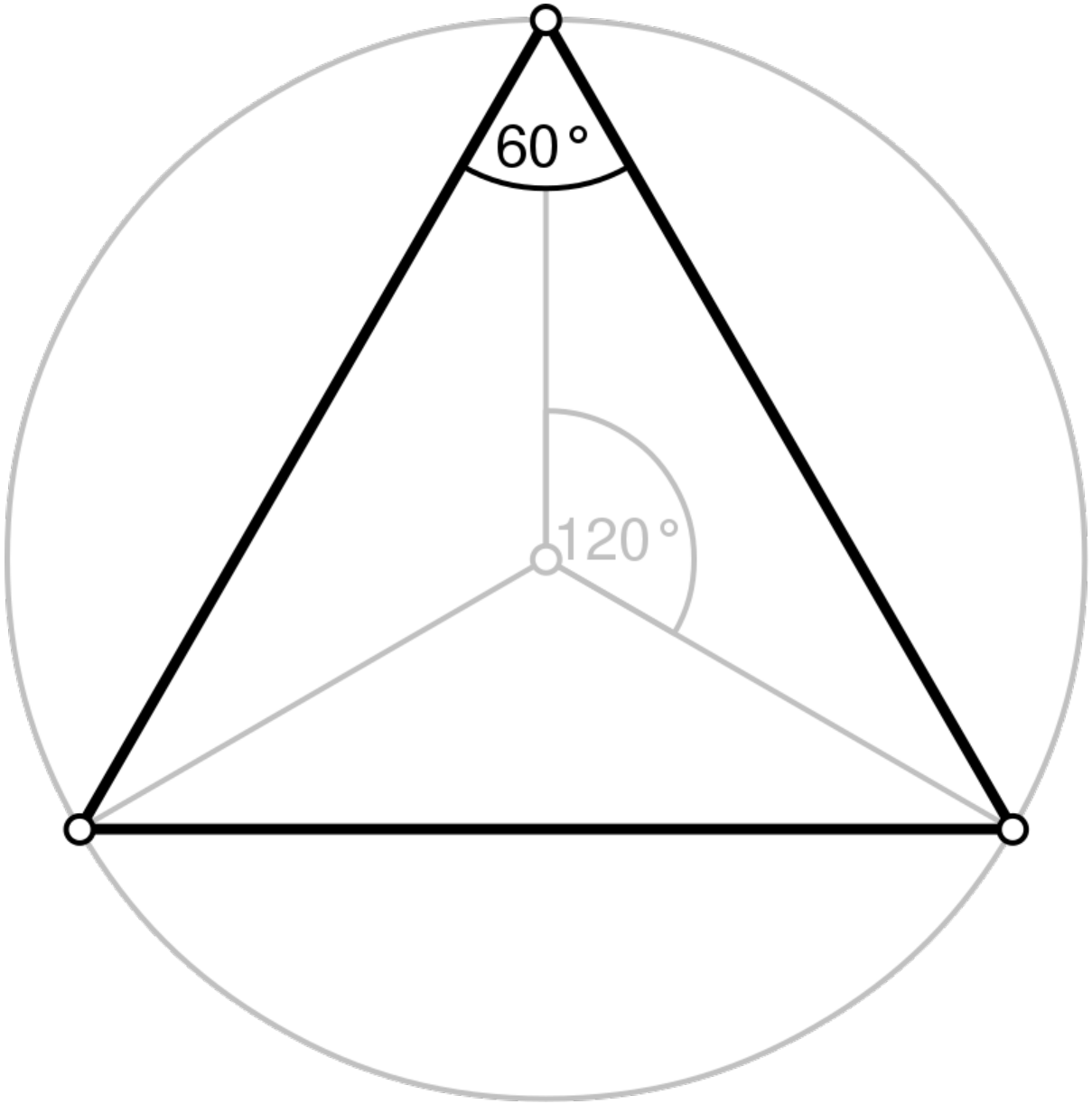
A SUPER-MASSIVE **BLACK HOLE** IS ACCRETING A STAR, CREATING A LUMINOUS ACCRETION DISK + POWERFUL JETS, EXTREME PHYSICS OF RELATIVISTIC MOTION AND PLASMA DYNAMICS AS THE STAR IS TORN APART BY TIDAL FORCES --AR 2:1 --S 750 **[MIDJOURNEY 5]**

The Triangle

Triangles are inherently powerful shapes, appearing abundantly in nature and art due to their **stability, balance, and dynamic nature**. The geometric strength of triangles lies in their structural integrity; their three sides and three angles distribute forces evenly, making them one of the most stable shapes. This stability lends them a sense of reliability and support that resonates with human perception.

Nature frequently showcases triangles, often in unexpected ways. The pyramidal formations of mountains, the branching of trees, and the crystalline structures of minerals all exhibit triangular geometry. Even living organisms, such as certain insects and birds, display triangular patterns in their wings or bodies. These natural instances underscore the evolutionary efficiency of the shape in distributing forces and optimizing space.

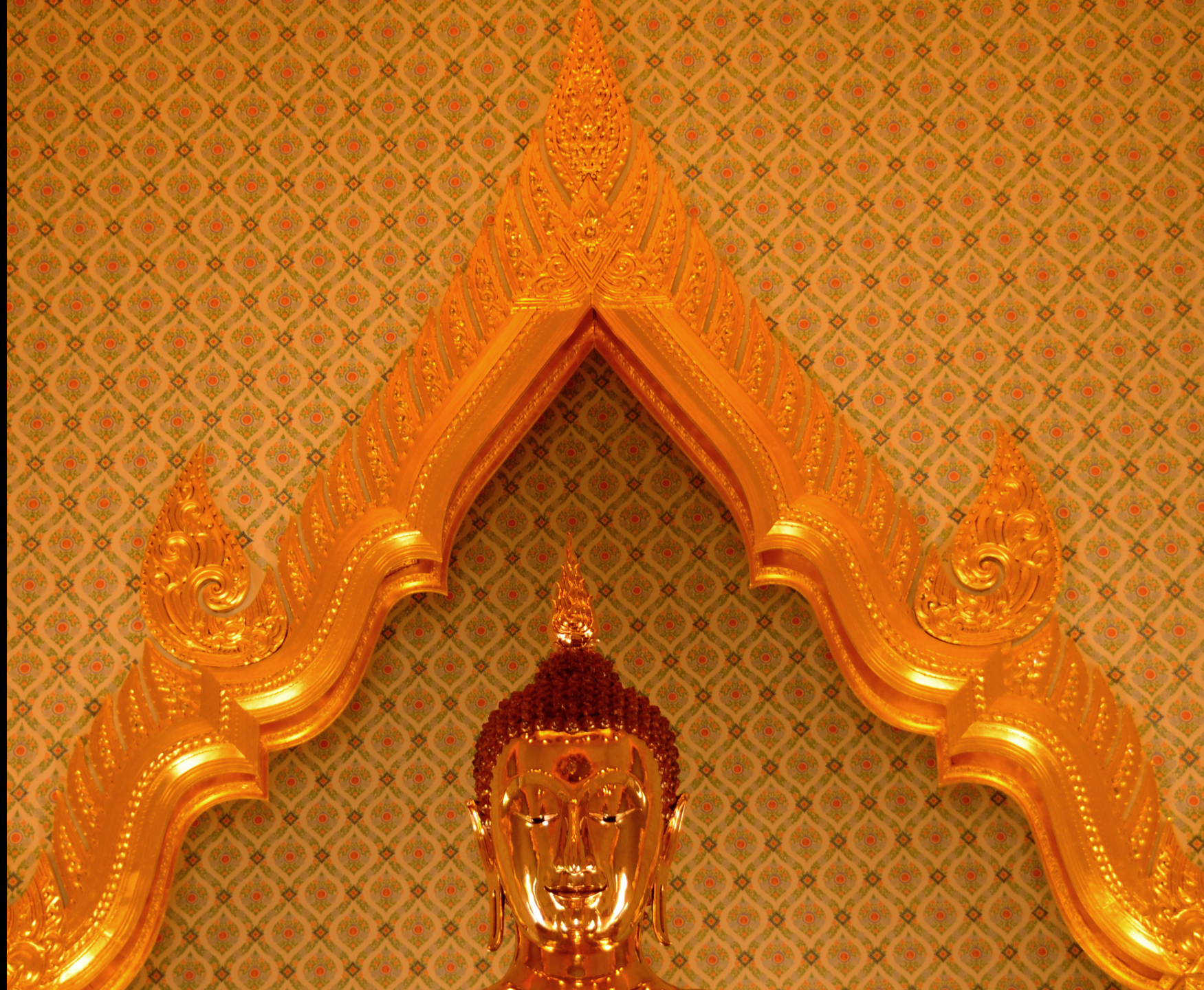
In art and design, triangles carry potent symbolism. Equilateral triangles signify balance and harmony, while acute or obtuse triangles convey tension and movement. The principle of threes, encapsulated by triangles, holds significance across cultures, epitomizing concepts like beginning, middle, and end— or past, present, and future. This inherent balance, combined with the versatility of triangular arrangements, makes them a favorite tool for artists to create visually engaging and emotionally resonant compositions.



The Golden Triangle

The **golden triangle** is a fundamental concept in composition, offering photographers a powerful tool to create captivating and harmonious images. Comprising an imaginary triangular shape within the frame, this technique introduces balance, depth, and dynamic visual appeal to photographs. In the golden triangle, converging lines, subjects, or elements form the corners of the triangle, guiding the viewer's gaze with precision. This arrangement elevates the overall composition by establishing a sense of movement and direction within the image. Whether applied to landscape, portrait, or architectural photography, **the golden triangle method enhances visual narratives**. In landscapes, it adds depth and perspective, allowing the viewer to explore the scene with a sense of scale. For portraits, it accentuates the subject's features and emotions while providing context through the surrounding environment. In architectural photography, it emphasizes the structure's grandeur and design details.

Wat Traimit • 14.3 x 9.5 • Bangkok, Thailand • 3.10.2010 • f/4.5 • 1/80 sec • 250 ISO • 12 mm • Nikon D300 • Jazno Francoeur

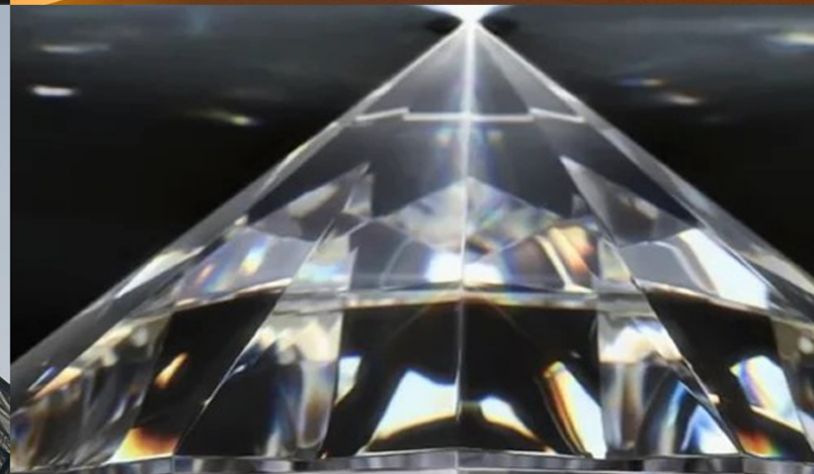


The Power of the Triangle

The ubiquitous presence of **triangular shapes** in nature, such as waves, mountains, and sand dunes, can be attributed to fundamental principles of pattern formation and optimization. These shapes emerge as a result of natural processes that seek efficiency and stability. Waves, for instance, form triangular peaks due to the balance between gravitational forces pulling them down and surface tension preventing them from spreading indefinitely. Mountains often exhibit triangular profiles because erosion carves them into stable shapes, minimizing potential energy. Sand dunes, shaped by wind, take on triangular forms, as this is the most energy-efficient way for sand grains to settle. Humans, drawing inspiration from nature's elegance, incorporate triangles in architecture for structural stability. Triangular trusses distribute loads efficiently, making them essential in bridge and roof designs. In gem cutting, triangular facets can enhance a gemstone's brilliance by optimizing light reflection and refraction.

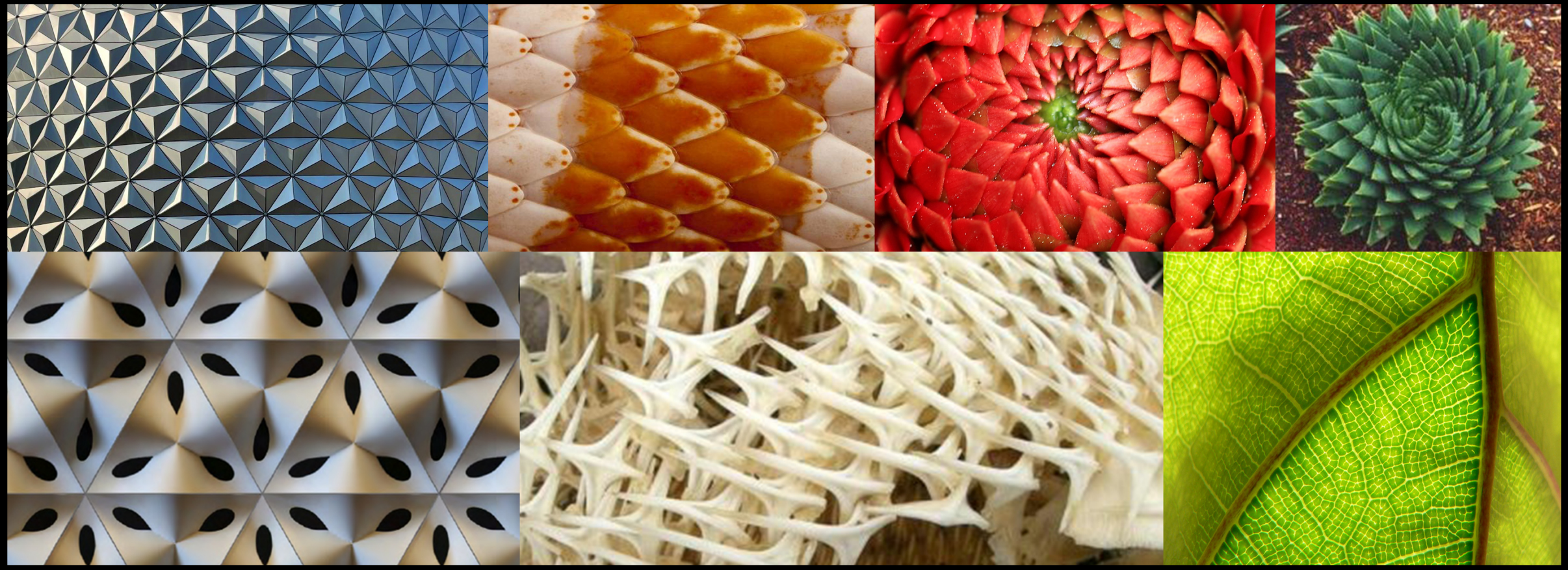




Triangular Tessellations

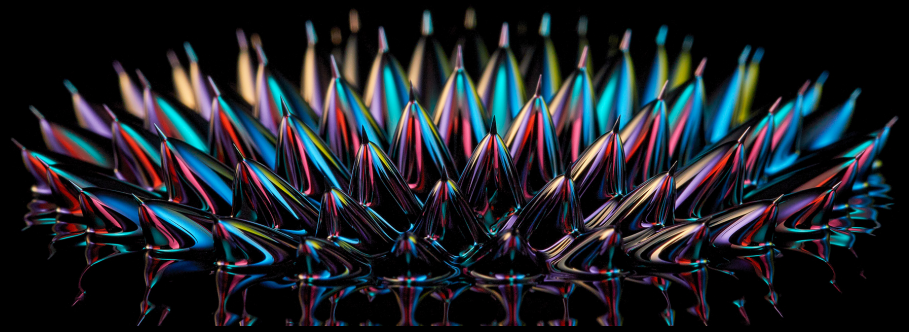
Triangular tessellation finds its way into various aspects of the natural world and human design. **Epcot Center's iconic geodesic dome**, designed by Buckminster Fuller, showcases the strength and efficiency of triangular tessellation in architectural marvels. The pattern's structural integrity ensures even weight distribution and durability, making it a popular choice for geodesic domes worldwide. In the realm of biology, **snake scales** often exhibit triangular tessellation, aiding these reptiles in both flexibility and protection. The distinctive spiral pattern of **Aloe polyphylla**, known as the "spiral aloe," displays intricate triangular tessellation. Microscopic wonders reveal triangular tessellations in **diatoms**, single-celled algae with glass-like shells. These patterns enable nutrient absorption and buoyancy control. **Pufferfish**, known for their charmingly dangerous appearance, boast triangular tessellations in their intricate skin patterns. Nature's design continues with **leaf venation**, where certain plant species display triangular tessellation in the arrangement of veins. This geometric beauty combines both form and function, optimizing resource distribution within the leaf.

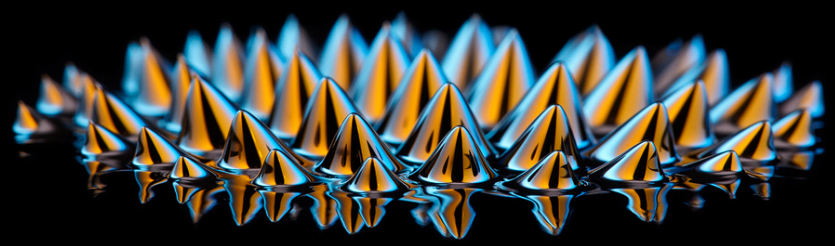


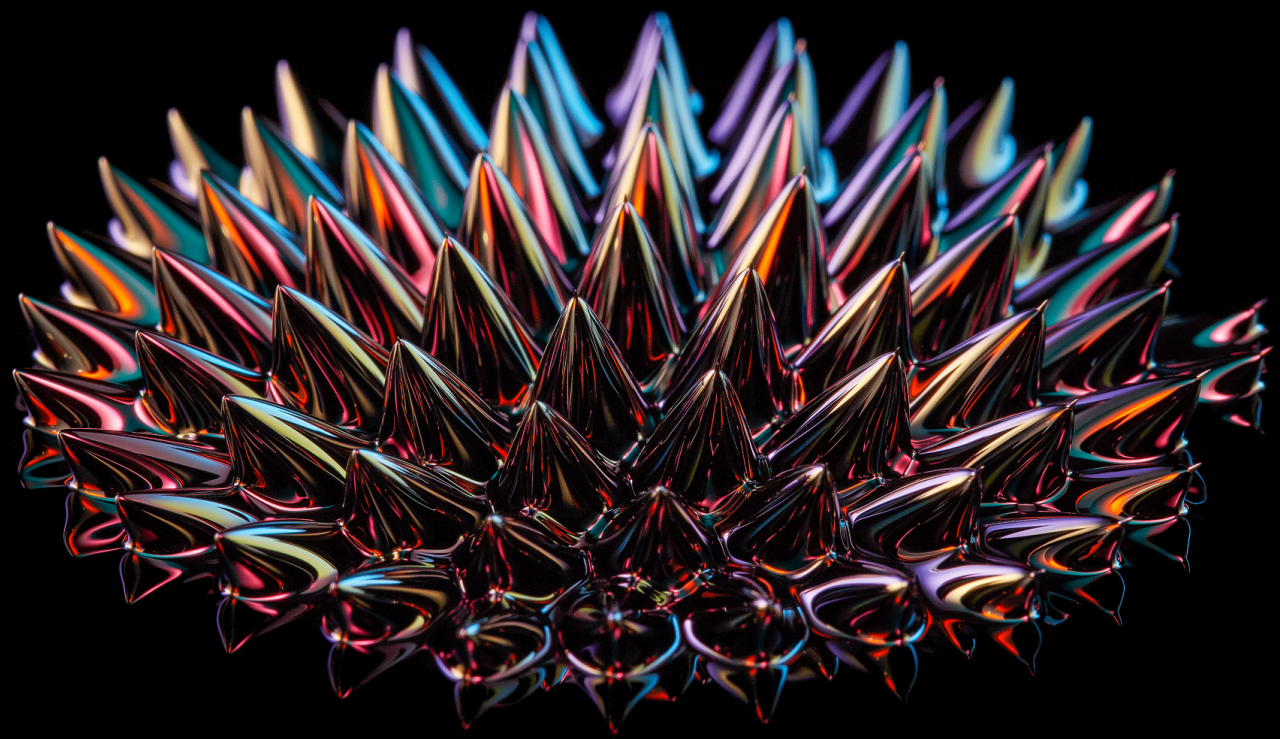
https://fotografie.at/galerie/image/391853-ferrofluid/

Triangular Liquids

Magnetic liquids, often known as **ferrofluids**, are colloidal suspensions of nanoscale magnetic particles in a carrier fluid, typically an oil or water. When exposed to a magnetic field, ferrofluids exhibit intriguing behavior due to the alignment of magnetic particles. Triangular spikes form because the magnetic forces cause the fluid's surface to deform into distinct, pointed shapes, aligning with the magnetic field lines. These spikes are a result of the balance between magnetic and surface tension forces. This phenomenon finds applications in various technologies, including engineering, optics, and medicine, where precise control of fluid shape and movement is required.



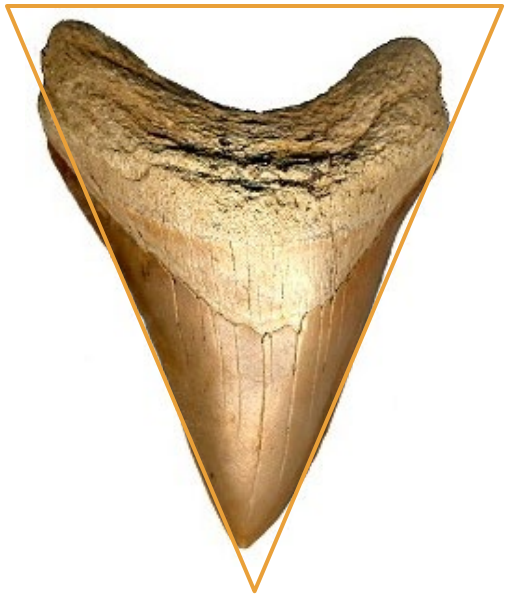




The Shape of Danger

Images courtesy of Claire Hummel

In nature, the **inverted triangle** echoes the ominous form of predatory creatures like venomous snakes, lurking predators, and the beaks of birds of prey diving for their quarry. This association taps into our primal fear of vulnerability, where the apex points downward like a threat poised to strike. The menacing quality is further emphasized by its contrast to the more common upward-facing triangle, which symbolizes growth and aspiration. In visual storytelling, the downward facing triangle's power to evoke menace is harnessed ingeniously. In architecture, it imparts a sense of foreboding in haunted houses or oppressive structures. In design, it can imbue logos and branding with a subliminal sense of dominance. A skillful utilization of this triangle taps into our innate responses, channeling the primal awe of nature's creatures and unlocking a narrative depth that resonates with our deepest instincts.



Triangular Composition

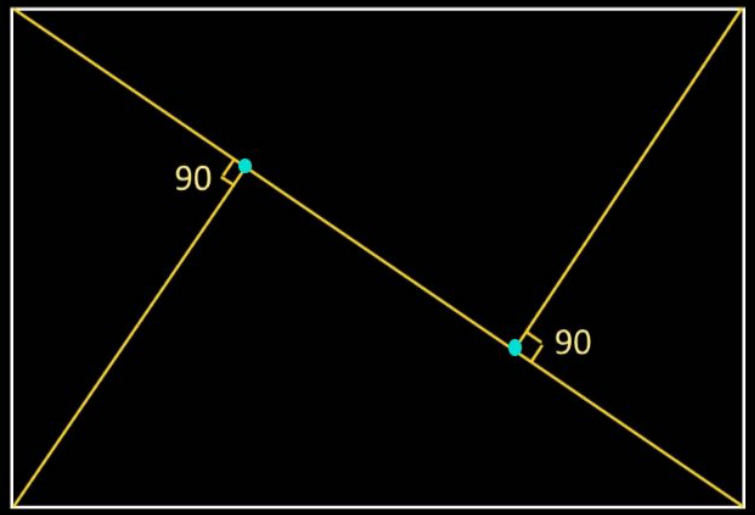
The beauty of all shapes is that they can be used to encapsulate silhouettes (see the **red triangles**, below right), or they be employed in the service of directing the eye of the viewer (see the **blue triangle**, below right). Any good composition will be composed of big, medium, and small shapes, and likewise, will lead your eye in a purposeful manner sequentially across the page. The blue triangle represents **movement**, one of the most important elements of design; similarly, the preponderance of the red triangle shapes represent **rhythm,** another equally critical design element. Both of these will be covered more fully in the coming slides.

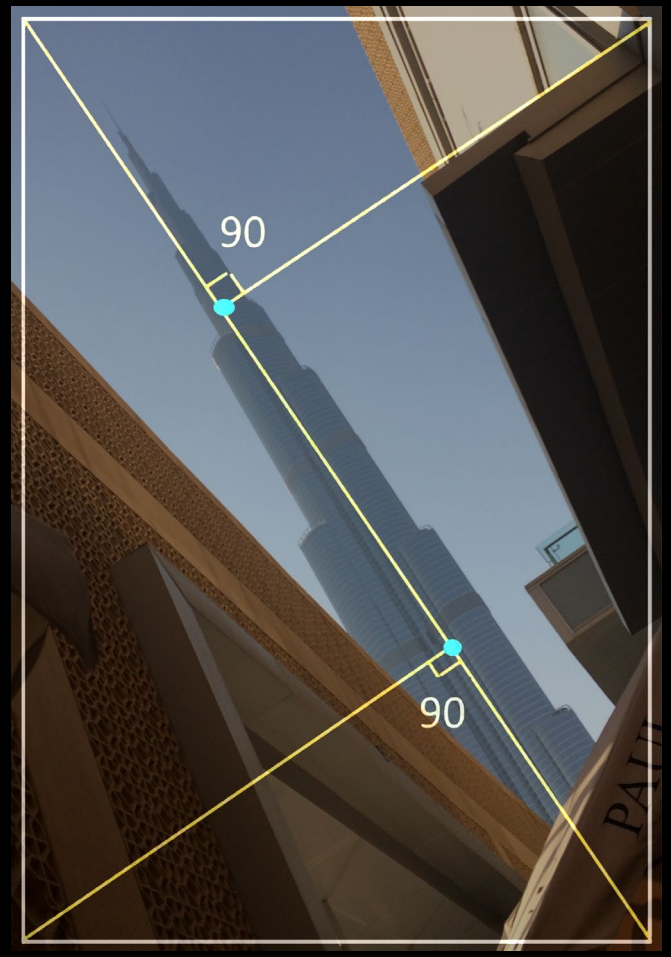
Assembly of the Tribunes • 58.67 x 44 • Harajuku, Tokyo, Japan • 8.9.2009 • f/2.8 • 1/20 sec • 400 ISO • 7.6 mm • Sony DSC-W300 • Jazno Francoeur

The Golden Triangle:

https://erickimphotography.com/blog + https://steemit.com/art/@harrynewman/the-golden-triangle

If you draw a diagonal line through the photo with an adjacent line reaching out to the other corners of the frame, the eye is naturally drawn to the points where they meet (see image by Henri Cartier-Bresson in lower left). **Triangles are one of the best compositional techniques you can use in photography to fill the frame, add balance, and add movement in your images**.



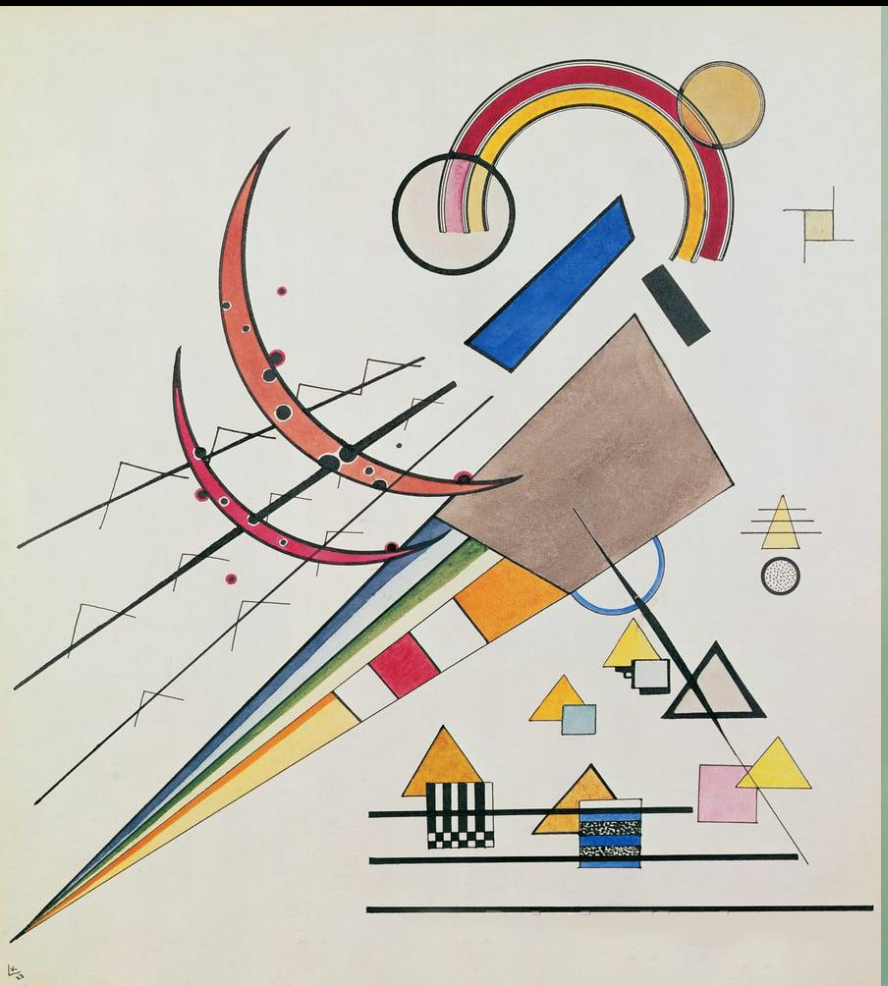


Burj Kalifa • 2448 x 3264 • Dubai, UAE • f/2.22 • 1/1282 sec • 32 ISO • 27.2017 • iPhone • Jazno Francoeur

TRIANGLE SHAPES, WASSILY KANDINSKY:

*"A **TRIANGLE** PROVOKES A LIVE EMOTION BECAUSE IT IS ITSELF A LIVING BEING. IT IS THE ARTIST WHO KILLS IT IF HE APPLIES IT MECHANICALLY, WITHOUT INNER DIRECTION. BUT LIKE AN 'ISOLATED' COLOR, AN 'ISOLATED' TRIANGLE CANNOT BY ITSELF CONSTITUTE A WORK OF ART. THE SAME LAW OF 'CONTRASTS' APPLIES. **ONE MUST NOT FORGET THE POWER OF THE MODEST TRIANGLE.** WE KNOW THAT, IF WE DRAW A TRIANGLE WITH VERY THIN LINES, ON A WHITE SHEET OF PAPER, THE WHITE INSIDE THE TRIANGLE AND THE WHITE AROUND IT BECOME VERY DIFFERENT, THEY RECEIVE DIFFERENT 'COLORS' WITHOUT US ADDING ANY COLOR. THIS IS A PHYSICAL AND PSYCHOLOGICAL FACT. AND, WITH THE CHANGE OF COLOR, IT CHANGES 'ITS INTERIOR'. IF YOU ADD ANOTHER COLOR TO THIS TRIANGLE, THE SUM OF EMOTIONS INCREASES IN GEOMETRIC PROPORTION, THIS IS NOT AN ADDITION BUT A MULTIPLICATION."*

HTTPS://WWW.SOTHEBYS.COM/EN/AUCTIONS/ECATALOGUE/2013/ART-IMPRESSIONNISTE-ET-MODERNE-PF1316/LOT.15.HTML

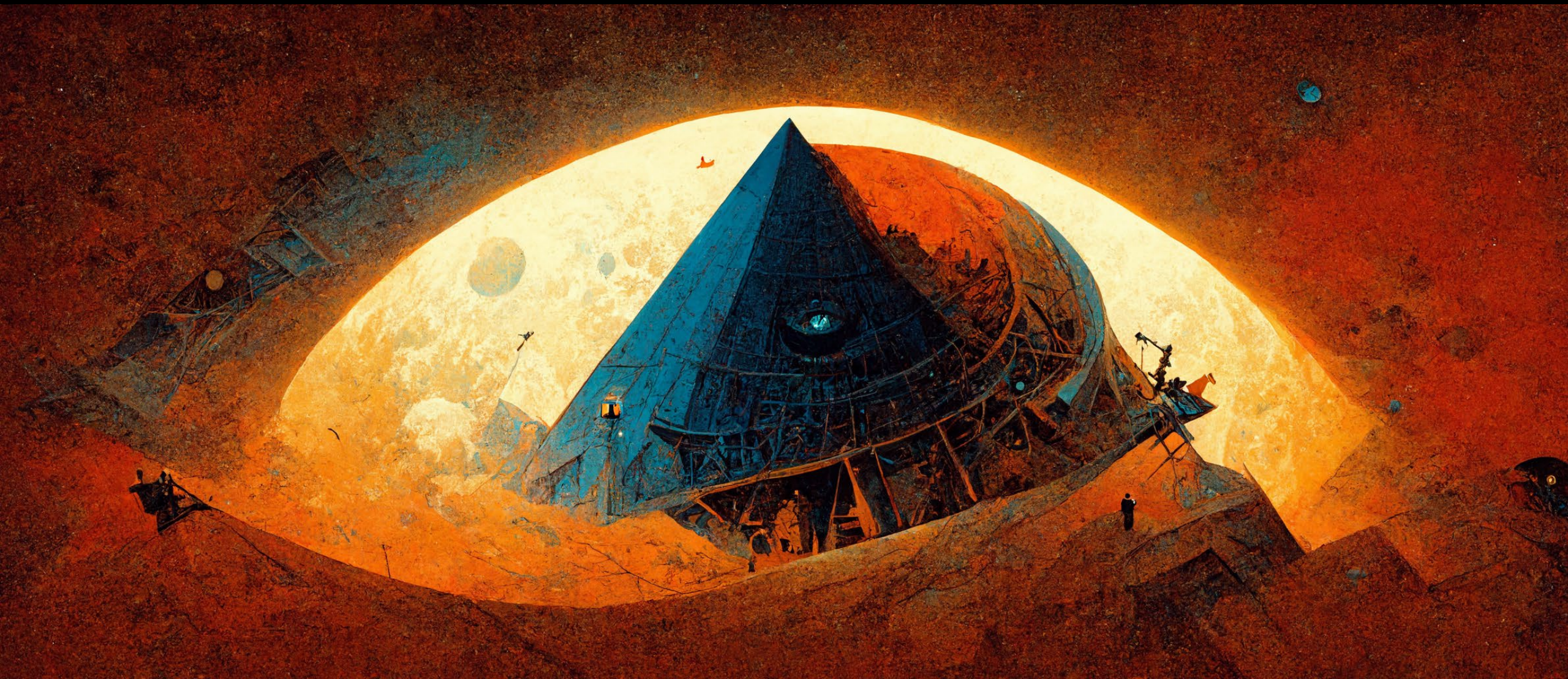


TRIANGULAR SHAPES, 21 MARTYRS:

HTTPS://S.MJ.RUN/7CIJKWOHPIO HTTPS://S.MJ.RUN/W_DCRASL8FC HTTPS://S.MJ.RUN/Q7ZDQIU3LCK HTTPS://S.MJ.RUN/U0WX9J_8TRY
HTTPS://S.MJ.RUN/QPZR7HWPBZQ STORM CELL IN **GEOMETRIC SQUARE + TRIANGULAR SHAPES**, NIMBUS CLOUDS, YELLOW FILL LIGHT, EXTREME CLOSE-UP OF CLOUDS, GRAPHICAL RECTILINEAR SHAPES, DECO, COMIC BOOK, STYLE OF DICK EVANS, WPA POSTER, EGYPTIAN COPTIC --AR 4:3 **[MIDJOURNEY 5.2]**

TRIANGULAR FORMS, DUNE RECONSIDERED:

CELESTIAL OBSERVATORY RESEMBLING KHUFU'S **PYRAMID** AND A LEAF BLOWER ORBITING JUPITER, EXTREME BIRD'S EYE VIEW LOOKING DOWN, JUPITER'S RED EYE STORY SWIRLING, DRAMATIC LIGHTING, BLUE KEY LIGHT, ORANGE FILL LIGHT, STYLE OF MIKE MIGNOLA --AR 32:9 **[MIDJOURNEY 3]**



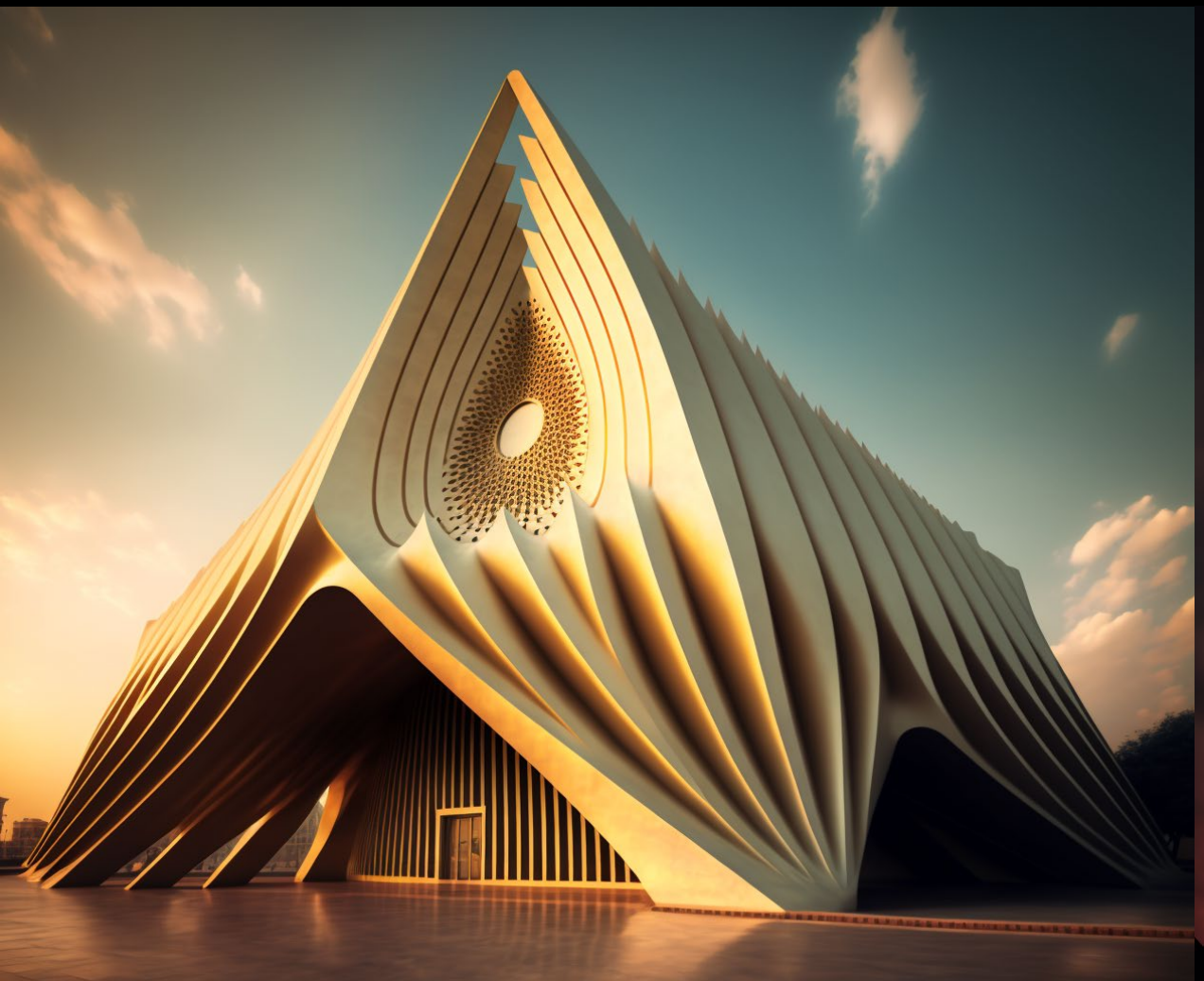
TRIANGULAR FORMS, THE LAKHIYANA:

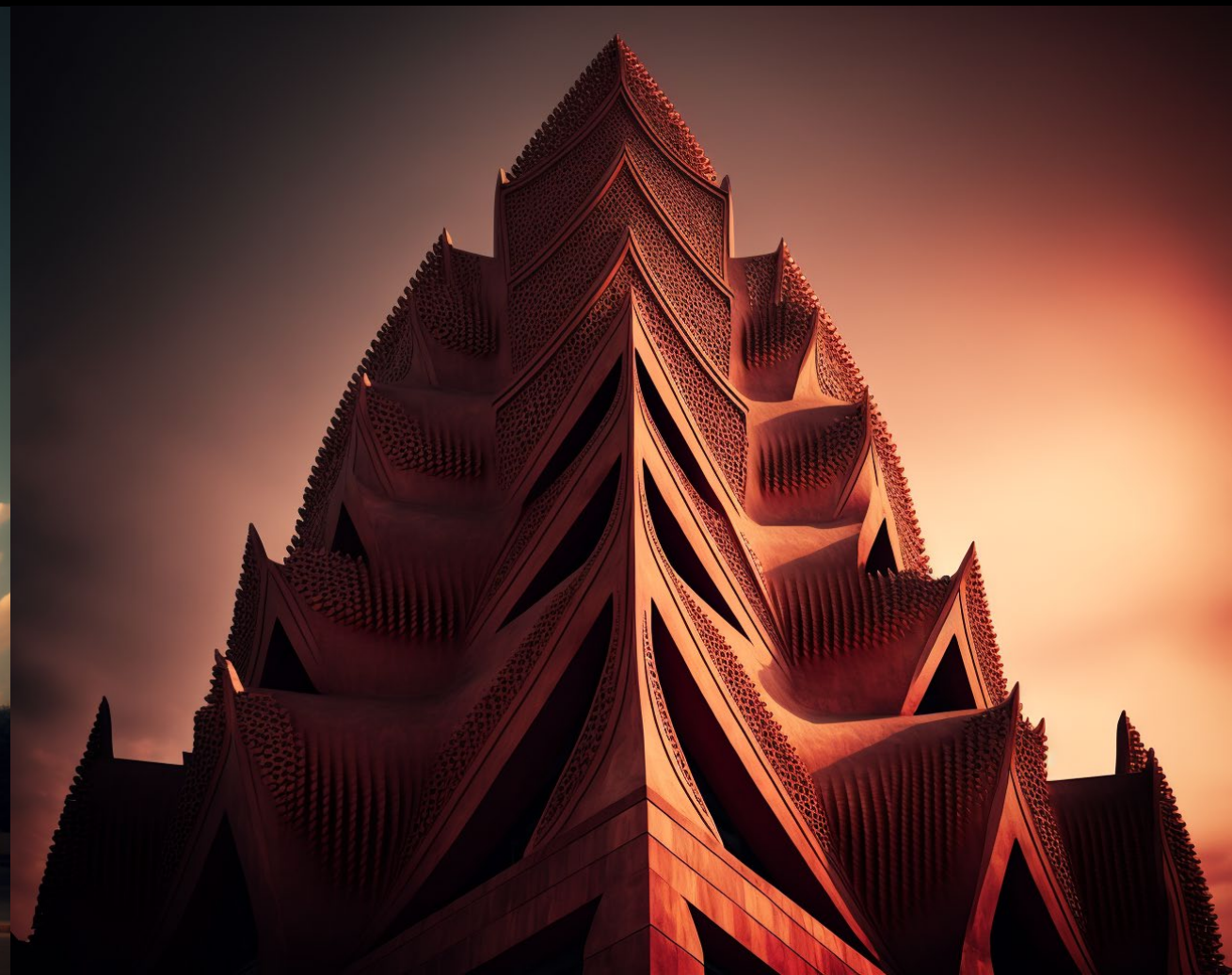
FUTURIST **TRIANGULAR** SPACESHIP MELDED WITH A KALIMBA DESIGN FLOATING IN A HANGAR WITH EXHAUST FILAMENT MIMICKING PLUCKING TINES, RUSTED SURFACE WITH FLAKING PAINT, PATINA OF TIME, STYLE OF 70'S FUTURISM AND AFRO FUTURISM, DRAMATIC LIGHT, WEATHERED TEXTURES, HASSELBLAD, CARL ZEISS LENS, CHIAROSCURO, BATTLE DAMAGE, PATINA OF TIME --AR 3:2 **[MIDJOURNEY 4]**

TRIANGULAR FORMS, THE LAKHIYANA:

FUTURISTIC EAST INDIAN **TRAPEZOIDAL** MEETING HALL IN THE STYLE OF VAN HERPEN + ZAHA HADID, BABUR-ERA STYLING, GOLDEN HOUR, 35-MM-LENS, SHARP-FOCUS, INTRICATELY-DETAILED, DRAMATIC PERSPECTIVE –AR 3:2 **[MIDJOURNEY 4]**

FUTURISTIC **GOPURA** IN THE STYLE OF VAN HERPEN AND ZAHA ADID MADE OUT OF RED MARBLE, GOLDEN HOUR, 35-MM-LENS, SHARP-FOCUS, INTRICATELY-DETAILED, EXTREME ANGLE, DRAMATIC PERSPECTIVE –AR 3:2 **[MIDJOURNEY 4]**





TRIANGULAR FORMS, THE LAKHIYANA:

3/4 VIEW OF A LARGE **TRIANGULAR TELEPORTATION DEVICE** MATERIALIZING SPACE SHIPS IN THE STYLE OF ZAHA HADID OVER THE LOUVRE IN FUTURISTIC PARIS, LASER BEAMS DESTROYING CITY, 85-MM-LENS, BLUE TONES, SUBSURFACE SCATTERING, DIFFUSE-BACK-LIGHTING --AR 2:1 **[MIDJOURNEY 4]**

TRIANGULAR FORMS, THE LAKHIYANA:

TRIANGULAR WHITE & BLUE FUTURISTIC TENT-LIKE BUILDINGS CONNECTED TOGETHER LIKE CASCADING OCEAN WAVES, STYLE OF THE WUQUF COVERED IN THOUSANDS OF REFLECTIVE BISMUTH CRYSTALS, RAY TRACING, BOUNCED LIGHT, ZAHA HADID + FRANK GEHRY, NIGHT TIME, 35MM FILM GRAIN, ANAMORPHIC, ANALOG, GUM BICHROMATE PRINT, SNOWSTORM --AR 2:1 **[MIDJOURNEY 5.2]**

TRIANGULAR FORMS, LORD OF THE LEGOS:

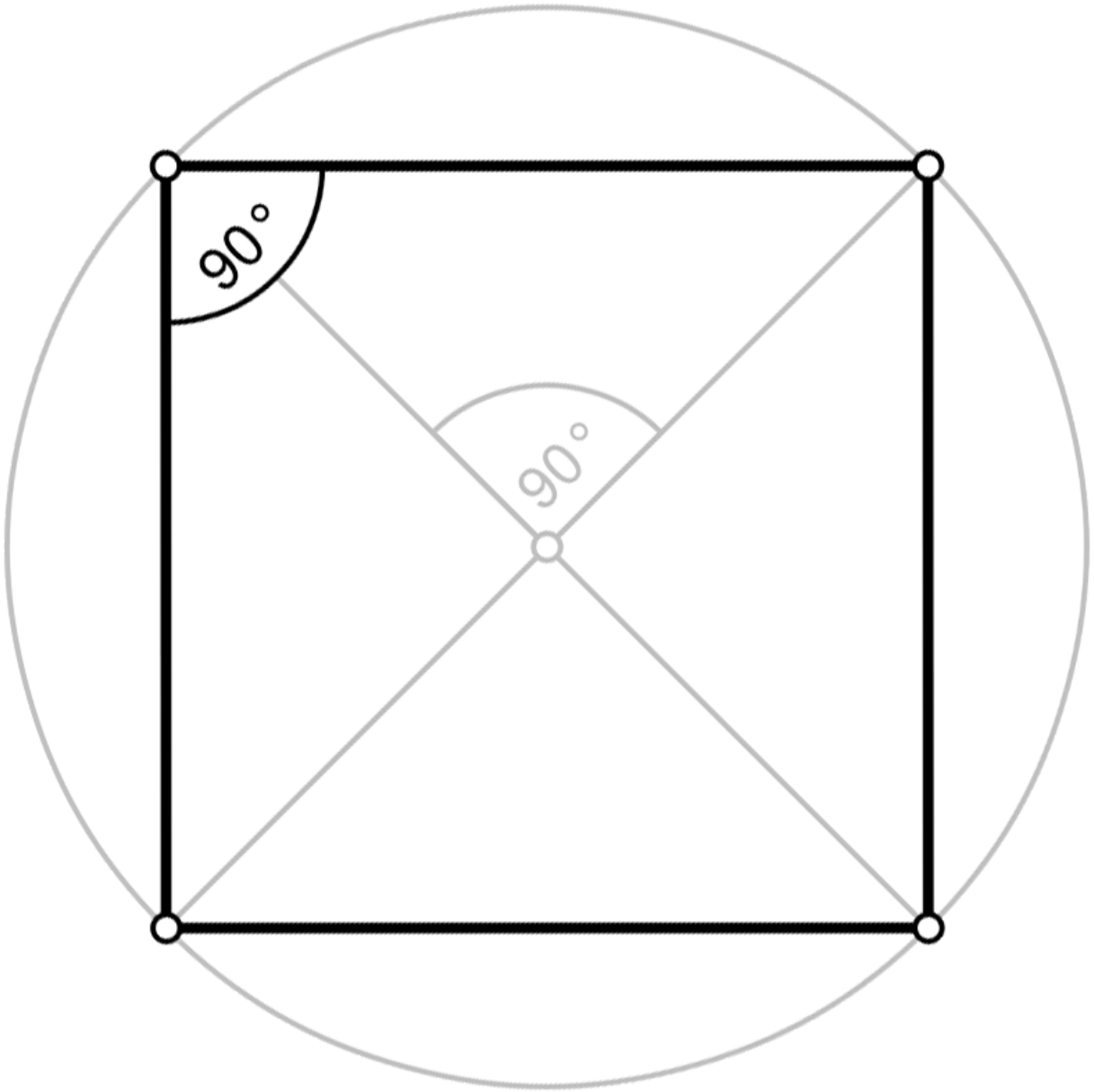
EXTREME CLOSE-UP, **LEGO** LORD OF THE RINGS, SHOCKED FRODO COMPRISED OF **DOZENS OF LEGOS**, EXPONENTIALLY EXTRUDED FRAMING, 2D TO 3D MIRRORED **4D TESSERACTS** + RAY TRACING, HIGHLY REFLECTIVE + SUBSURFACE SCATTERING --AR 2:1 **--SEED 1242957049** **[MIDJOURNEY 5.1]**

The Square

The **square** stands as a universal symbol of stability, balance, and order, transcending cultural boundaries to evoke a sense of harmony. Its four equal sides exemplify symmetry, mirroring the cardinal directions and the balance inherent in nature's cycles. In cultures worldwide, the square has emblematic significance: in Western traditions, it signifies solidity and rationality; in Eastern philosophies, it embodies protection and grounding.

In psychology, the square's even sides evoke a feeling of safety, providing a sense of containment and predictability. This underpins its integration into architecture, design, and art. In photography, its utilization traces back to the advent of medium format cameras, where the square format became synonymous with iconic photographers like Diane Arbus and Richard Avedon. This format challenges photographers to adapt their composition, focusing on symmetry, leading lines, and central subjects.

Moreover, artists throughout history have employed the square to convey both static stability and dynamic tension. Kazimir Malevich's "Black Square" exemplifies abstraction's pure essence, while Piet Mondrian's squares radiate spiritual equilibrium. In contemporary art, the square's regularity is juxtaposed with disruptions, sparking visual intrigue.



The Square

During the Renaissance, the **square** emerged as a symbol of balance, order, and mathematical precision. It captured the era's fascination with symmetry and geometric perfection. Leonardo da Vinci, a polymath of his time, viewed the square as a foundational element in his artistic and architectural pursuits. He recognized its harmonious proportions and employed it in his studies of perspective, proportion, and architectural design, echoing the Renaissance's pursuit of harmony between science and art.

Architects of the Renaissance, including Filippo Brunelleschi and Leon Battista Alberti, integrated the square into their architectural principles, using its geometric purity to establish proportional relationships and structural integrity in their designs. The square's significance extended beyond mere geometry; it symbolized divine proportion and the quest for aesthetic perfection.

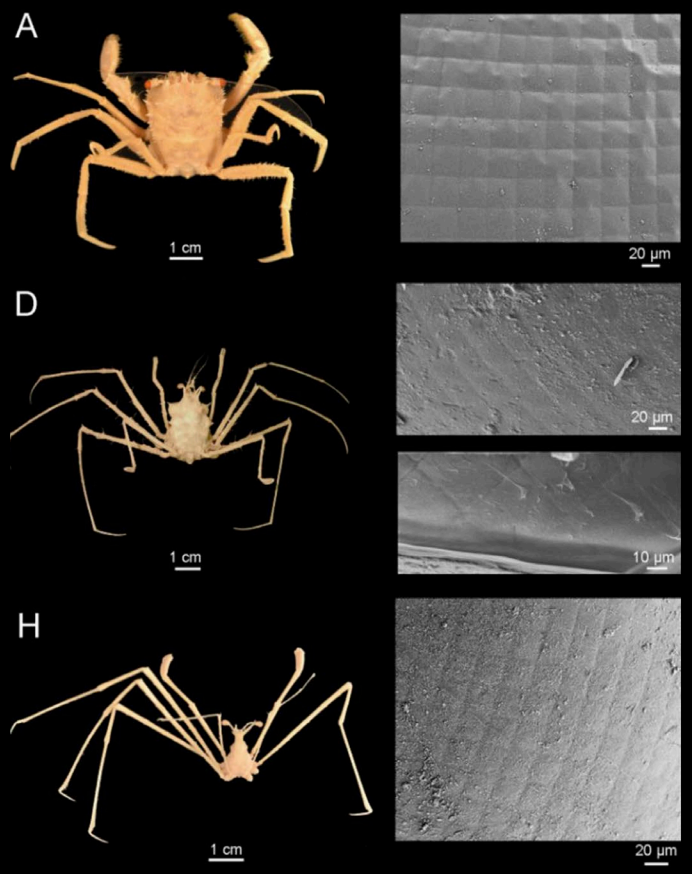
Casa Azul • 4288 x 2848 • Mexico City, Mexico • 3.9.2017 • f/3.5 • 1/100 sec • 320 ISO • 18 mm • Nikon D300 • Jazno Francoeur

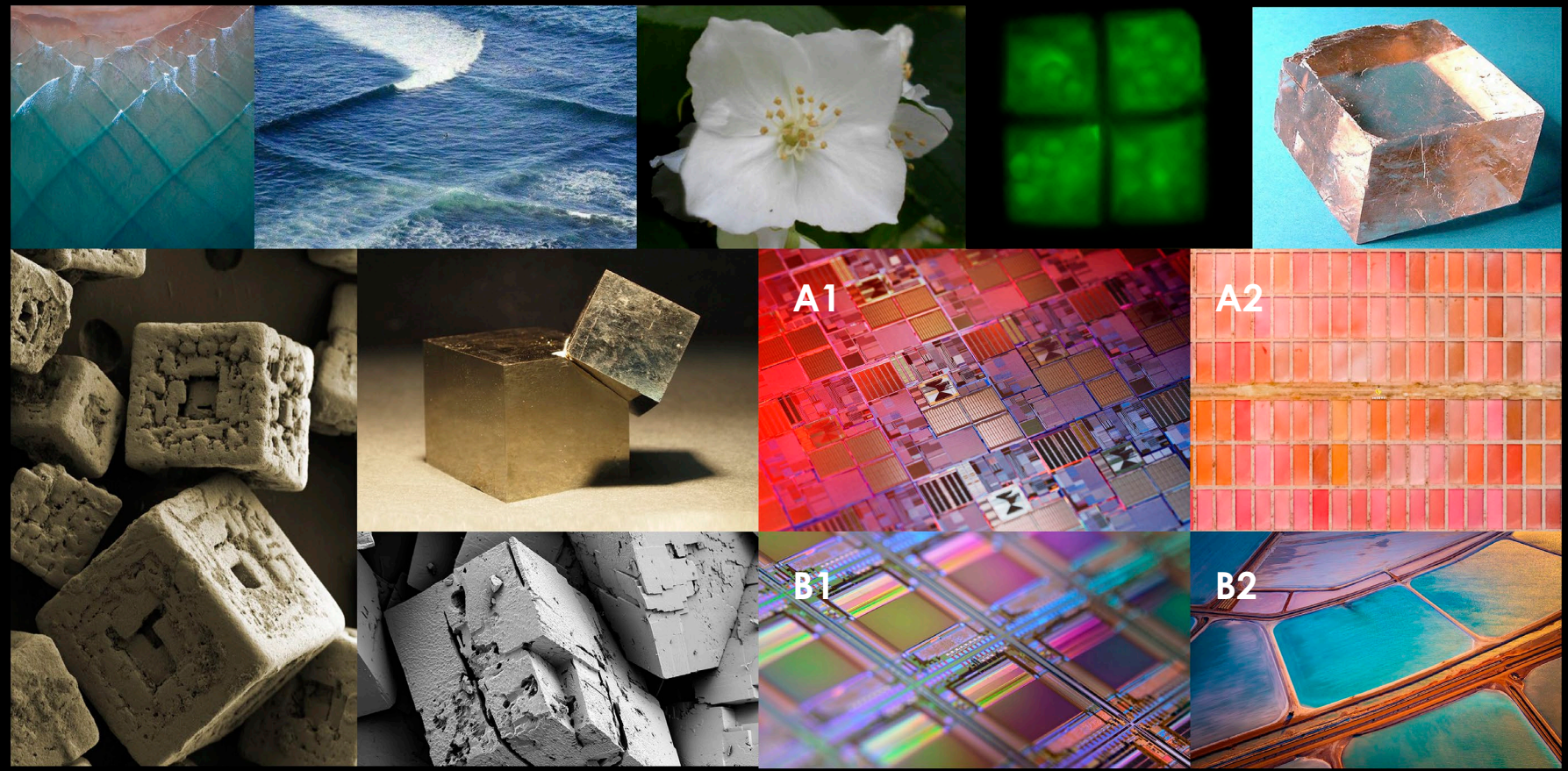
The Power of the Square

The **square** is among the most ubiquitous shapes globally, owed to its innate balance, simplicity, and remarkable adaptability. Its four equal sides and right angles grant it a unique visual appeal and functional versatility. As previously stated, the square symbolizes stability and equality, serving as the foundational blueprint for architectural designs, buildings, and urban layouts, instilling order and functionality. In the realm of manufacturing and technology, square components such as circuit boards and screens are efficient and easy to standardize. Furthermore, square-shaped containers excel in space optimization and stacking, making them the preferred choice for packaging and transportation. Humanity's penchant for crafting objects with square shapes is driven by their harmonious blend of practicality and aesthetic allure. From art canvases to floor tiles, furniture pieces to electronic devices, and even in emblematic representations like national flags, the square consistently proves its timeless appeal by balancing form and function, standing as a lasting testament to human creativity and design excellence.

Square Shapes and Forms in the Natural and Human-Made Worlds:

Square shapes and forms exist in unheralded places: in the tessellated eye structures of crustaceans, in the ocean (dangerous 'square waves'), in select flowers, and in bacteria (the four-paneled green square). As expected, square forms are more often found in minerals and geological formations. In figures A and B, the images to the left are microchips, and their similar counterparts are aerial photographs of industrial chemical fields (see following slide for more details). While not common, square shapes/forms exist in nature due to the underlying principles of pattern formation. In the natural world, square-like structures emerge when the balance of forces and environmental conditions favors regularity. **Square tessellations** in certain crustacean eyes likely stem from their specific visual demands and evolutionary history. This arrangement offers advantages in visual acuity, precision, and ecological niches. Genetic variation and natural selection have favored this unique adaptation in some crustacean species over hexagonal tessellations. Bacterial colonies can exhibit square patterns in growth as a result of chemical signaling and competition for resources. Geological minerals like pyrite can crystallize in **cubic shapes** through specific chemical interactions.



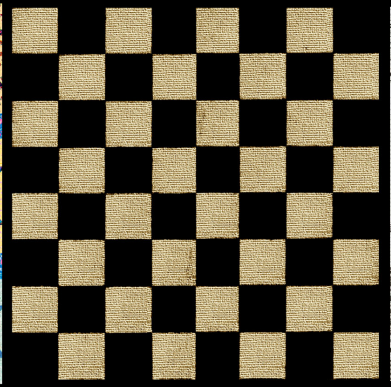
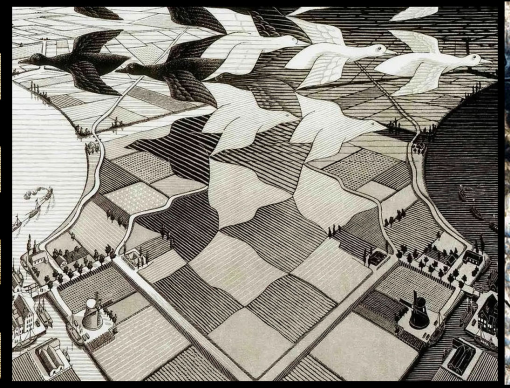
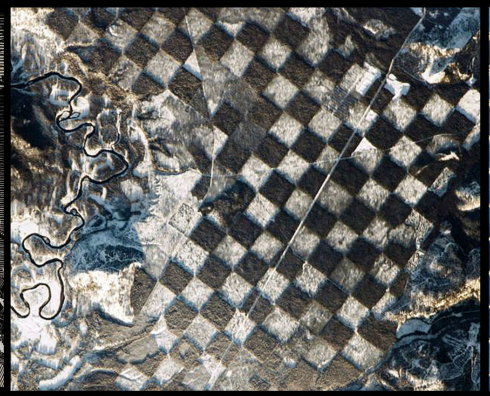
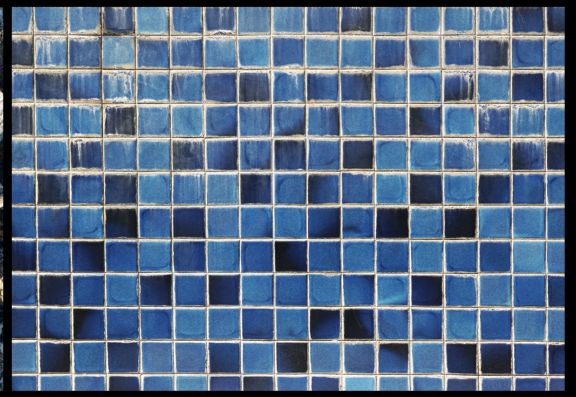


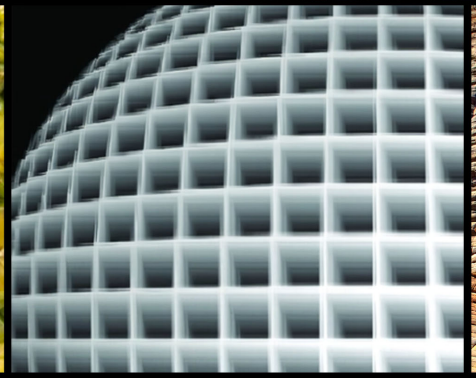
The Microcosm & Macrocosm of Squares

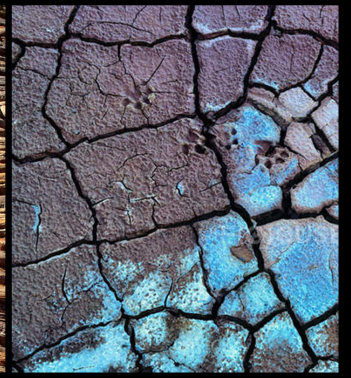
In each of the pairs below, the image to the left is a motherboard or details from a microchip, and the image to the right is a satellite image of a man-made landscape: A: Iraq oil refinery; B: a Midwest farmland; C: Las Vegas; and D: a cityscape. What do these seemingly disparate images have in common, aside from the preponderance of square shapes? Microchips and motherboards resemble satellite images of cityscapes and industrial sites because they both prioritize efficient spatial organization. In microelectronics, transistors and interconnects are meticulously arranged for optimal information processing, akin to urban planning for efficient land use. Motherboards similarly organize components like CPUs and memory in intricate patterns, mirroring urban infrastructure. These parallels underscore humanity's pursuit of efficiency in both the digital and physical realms, illustrating the interplay between technology and urban design.

Square Tessellations

Square tessellations feature prominently in art, design, and the environment. In **quilts**, square patches create intricate patterns, blending tradition and creativity. **Checkerboards**, composed of alternating dark and light squares, define classic board games like chess. Artist M.C. Escher's innovative use of **square tessellations in optical illusions** challenges perceptions and merges art with mathematics. **In landscapes, checkerboard patterns emerge** through alternating cultivation and fallow land, revealing the interplay between human activity and nature. Square tessellations, both simple and profound, enrich our visual experiences and leave their mark on various aspects of life. **Bathroom tiles** often feature square tessellations, creating visually pleasing and practical surfaces for walls and floors in home design. Square tessellations manifest uniquely in various natural phenomena. The venomous **Eastern Coral Snake** displays checkerboard-like squares on its scales as a warning signal. **Pineapple skin**, with its hexagonal pattern, can also evoke square tessellations upon closer inspection. **Lobsters possess compound eyes** comprising square facets, allowing for versatile vision. **Checkerboard Mesa** in Zion National Park features striking square tessellations on its sandstone cliffs due to erosion and weathering. In arid regions, **drying mud often forms intricate square tessellations** in the soil's surface.



The Square Format

https://digital-photography-school.com/the-beautiful-square/

At launch, Instagram mandated square images, altering how amateur photographers perceive and capture the world. Dall-E 2 formerly used only this format (see examples from my Shinjuku 2096 series). **Square format benefits in composition:**

Balance: Equal sides create perfect balance, ideal for symmetrical compositions.
Dynamics: Absence of a dominant axis results in circular eye movement, enhancing visual flow and viewer engagement.
Minimalism: Square suits minimal compositions, emphasizing the theme.
Simplicity: Square eliminates the need to crop a rectangle, focusing on essential elements; every element matters.

Shinjuku billboard, Kanji holograms, style of Sargent, reflective helmets, ray tracing, close-up, male Asian robot with Day of the Dead makeup, Tron, worm's eye view, full figure, red key light, cyberpunk, blue fill light, orange backlight, pink rim lights, dramatic lighting **[DALL-E 2]**

Shinjuku neon billboards with day of the dead and butoh styles, ray tracing, androids + stiletto heels, rainy night, reflective, upshot, Blade Runner, Joel Peter Witkin, extreme close-up, blue key light, orange fill light, dramatic lighting, fog **[DALL-E 2]**

Shinjuku, style of Joel Peter Witkin, rainy night, reflective, robots, holograms, ray tracing, male Asian android with glowing faceplate and Day of the Dead makeup looking out of smoky window with neon light reflections, red key light, cyberpunk, blue fill light, orange backlight, dramatic lighting **[DALL-E 2]**

DIANE ARBUS, SQUARE FORMAT:

"THE MORE SPECIFIC YOU ARE, THE MORE GENERAL IT'LL BE. ***A PHOTOGRAPH IS A SECRET ABOUT A SECRET. THE MORE IT TELLS YOU THE LESS YOU KNOW.*** *IN THE BEGINNING OF PHOTOGRAPHING I USED TO MAKE VERY GRAINY THINGS. I'D BE FASCINATED BY WHAT THE GRAIN DID BECAUSE IT WOULD MAKE A KIND OF TAPESTRY OF ALL THESE LITTLE DOTS ... BUT WHEN I'D BEEN WORKING FOR A WHILE WITH ALL THESE DOTS, I SUDDENLY WANTED TERRIBLY TO GET THROUGH THERE. I WANTED TO SEE THE REAL DIFFERENCES BETWEEN THINGS ... I BEGAN TO GET TERRIBLY HYPED ON CLARITY."*

HTTPS://EN.WIKIPEDIA.ORG/WIKI/DIANE_ARBUS

BARBARA KRUGER, SQUARE FORMAT & SHAPES:

BARBARA KRUGER'S PREFERENCE FOR SQUARE FORMATS AND RECTILINEAR SHAPES IN HER ART IS INTEGRAL TO HER DISTINCTIVE VISUAL LANGUAGE. THESE GEOMETRIC STRUCTURES PROVIDE A DISCIPLINED CANVAS FOR HER STRIKING JUXTAPOSITION OF BOLD TEXT AND EVOCATIVE IMAGERY. THE SQUARE'S SYMMETRY AND RECTILINEAR PRECISION EMPHASIZE HER MESSAGES WITH VISUAL CLARITY, CREATING A SENSE OF ORDER AND CONTAINMENT AMIDST THE CHAOTIC CULTURAL LANDSCAPE SHE CRITIQUES. ***"I WORK WITH PICTURES AND WORDS BECAUSE THEY HAVE THE ABILITY TO DETERMINE WHO WE ARE AND WHO WE AREN'T."*** *HTTPS://EN.WIKIPEDIA.ORG/WIKI/BARBARA_KRUGER*

SQUARE SHAPES, AVANT-GARDE SERIES:

VOGUE MODEL WEARING GEOMETRICAL SQUARE-SHAPED AVANT-GARDE COSTUME, MADE OF **LARGE SQUARES**, MAPPLETHORPE, EXTREME CLOSE-UP, 35MM ANAMORPHIC, INTENSE GAZE, SPLIT LIGHT, CARL ZEISS PLANAR 50MM F/0.7 **[MIDJOURNEY 5.2]**

SQUARE SHAPES, AMERICAN ICONS:

HTTPS://S.MJ.RUN/DFDDPXLHWMA HTTPS://S.MJ.RUN/UU97UWOHUDK HTTPS://S.MJ.RUN/C4GF9EPC8DW HTTPS://S.MJ.RUN/W5PA8YUVXW4 YELLOW MARILYN MONROE WITH UPTURNED DRESS AS EXTRUDED BIREFRINGENT DE STIJL FIBER OPTICS IN STENBERG TWINS CONSTRUCTIVIST MOVIE POSTER, STYLE OF DAIDO MORIYAMA + WILLIAM KLEIN SHOT WITH LOMO LC-WIDE 35MM, EXPOSED FRAME CARRIAGE, LIGHT LEAKS, LOMOGRAPHY REDSCALE XR 50-200 35MM, CARL ZEISS PLANAR 50MM F/0.7 --AR 2:1 **[MIDJOURNEY NIJI 5]**
HTTPS://S.MJ.RUN/QHCAQ1PF-1G HTTPS://S.MJ.RUN/SYT7ZYHBOZW HTTPS://S.MJ.RUN/COM55M8DJVU HTTPS://S.MJ.RUN/8NL1FBXVILY HTTPS://S.MJ.RUN/6S3U0W4UPFQ [MIDJOURNEY 5.2]

SQUARE SHAPES, THE ART OF PURPOSEFUL COINCIDENCE:

STYLE OF CONFOCAL LASER SCANNING MICROSCOPE, WHITE PAPER TORN IN RUSSIAN **CONSTRUCTIVIST SHAPES** EMERGING 2D TO 3D REVEALING AFRICAN DANCER CONTAINED IN KARA WALKER SILHOUETTES, GREEN FLAMES, ELECTROLUMINESCENCE, RAINBOW EXTRACTION, FRANZ KLEIN, DIEBENKORN, EXTREME CLOSE-UP --AR 2:1 **[MIDJOURNEY 5.2]**

SQUARE SHAPES, LIVING MOSAICS:

THOUSANDS OF BIREFRINGENT REFLECTIVE ZORFLEX GIRIH **MOSAIC TILES** FORMING THE FACE OF A MOROCCAN SAINT IN A COLORFUL MIHRAB, PENROSE TILING, RAY TRACING, BOUNCED BLUE LIGHT, CANON 5D, 35MM, CARL ZEISS LENS, OCTANE RENDER, SUBSURFACE SCATTERING --AR 3:2 **[MIDJOURNEY 4]**

THOUSANDS OF BIREFRINGENT REFLECTIVE ZORFLEX GIRIH **MOSAIC TILES** SWIRLING AROUND AND FORMING THE IMAGE OF GABRIEL BEFORE A COLORFUL BYZANTINE ALTAR WITH CISTERNS, TIEPOLO UPSHOT, ISHTAR GATE, PENROSE TILING, RAY TRACING, FORCED PERSPECTIVE, BOUNCED BLUE LIGHT, WARM KEY LIGHT, GOLDEN HOUR, CANON 5D, 35MM, CARL ZEISS LENS, OCTANE RENDER, SUBSURFACE SCATTERING –AR 3:2 **[MIDJOURNEY 4]**

SQUARE SHAPES, LIVING MOSAICS:

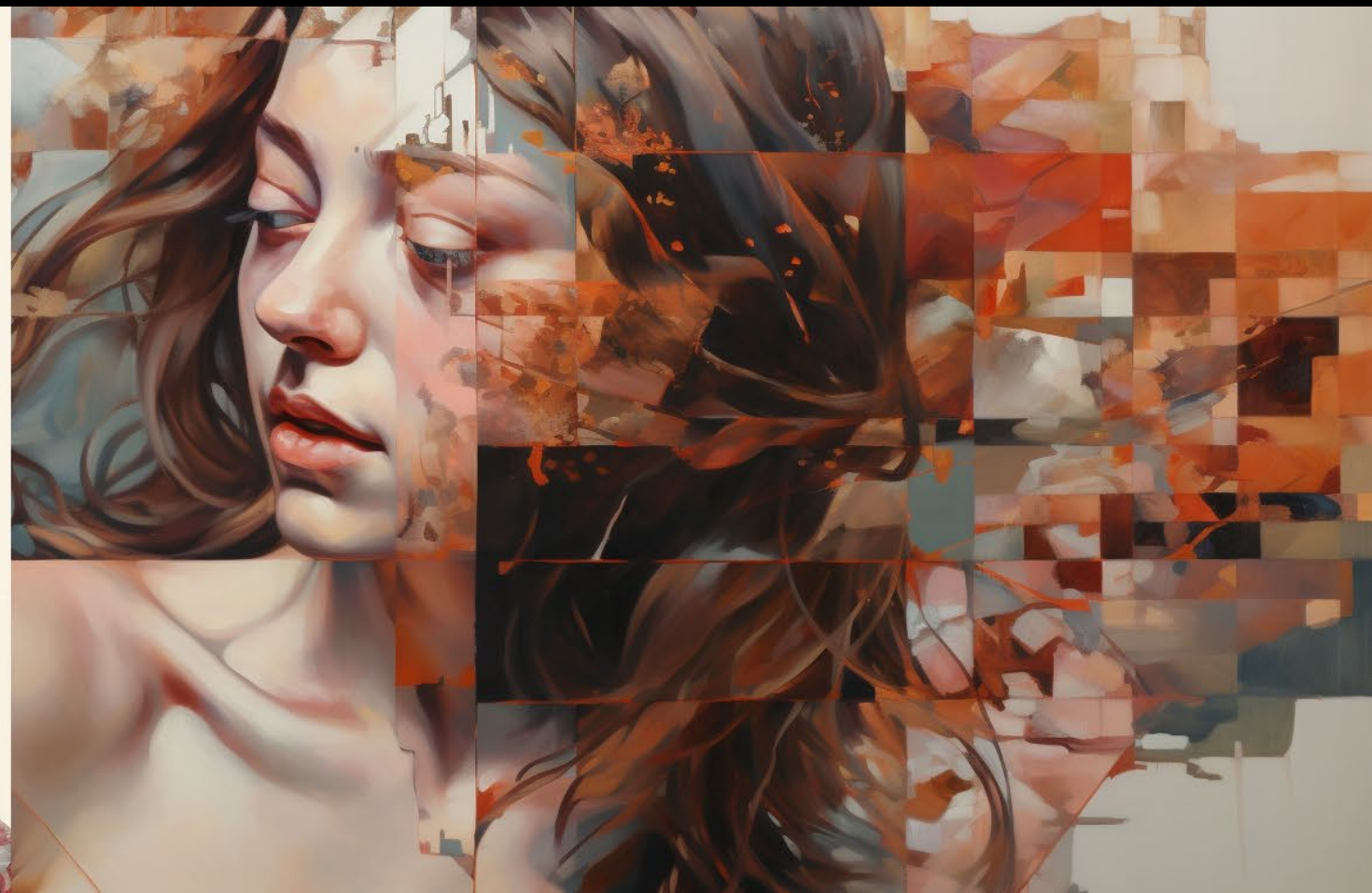
THOUSANDS OF BIREFRINGENT REFLECTIVE ZORFLEX GIRIH **MOSAIC TILES** FORMING THE IMAGE OF AN ETHIOPIAN COPTIC SAINT WITH A GOLD HALO, GREEN MIHRAB, PENROSE TILING, RAY TRACING, FORCED PERSPECTIVE, BOUNCED BLUE LIGHT, CINEMATIC LIGHTING, HYPER REALISTIC TEXTURES, CANON 5D, 35MM, CARL ZEISS LENS, OCTANE RENDER, SUBSURFACE SCATTERING --AR 3:2 **[MIDJOURNEY 4]**

THOUSANDS OF BIREFRINGENT REFLECTIVE ZORFLEX GIRIH **MOSAIC TILES** FORMING THE IMAGE OF WHITE WINGED HORSE FLYING TO THE EMPYREAN IN A COLORFUL MIHRAB, TIEPOLO UPSHOT, ISHTAR GATE, PENROSE TILING, RAY TRACING, FORCED PERSPECTIVE, BOUNCED BLUE LIGHT, WARM KEY LIGHT, GOLDEN HOUR, CANON 5D, 35MM, CARL ZEISS LENS, OCTANE RENDER, SUBSURFACE SCATTERING --AR 3:2 **[MIDJOURNEY 4]**

SQUARE SHAPES, GALERIES DE L'ABSURD:

JENNY SAVILLE-INSPIRED SCHIZOPHRENIC DREAMSCAPE OF BURNING BISMUTH GIRIH **TILES** FORMING A WOMAN WITH A FAUVIST SUBCUTANEOUS PALIMPSEST OF NATA RAJA HENNA TATTOOS DISPLAYING AN EXTRUDED ROSHAN LATTICEWORK, BISMUTH VENEER EMERGING FROM 2D TO 3D, GOYA + JOEL PETER WITKIN --AR 2:1 **[MIDJOURNEY NIJI 5]**

HTTPS://S.MJ.RUN/ZMIHFCRR4G8 JENNY SAVILLE-INSPIRED SCHIZOPHRENIC DREAMSCAPE OF BURNING BISMUTH GIRIH **TILES** FORMING A WOMAN WITH A FAUVIST SUBCUTANEOUS PALIMPSEST OF NATA RAJA HENNA TATTOOS DISPLAYING AN EXTRUDED ROSHAN LATTICEWORK, BISMUTH VENEER EMERGING FROM 2D TO 3D, GOYA + JOEL PETER WITKIN --AR 2:1 **[MIDJOURNEY NIJI 5]**



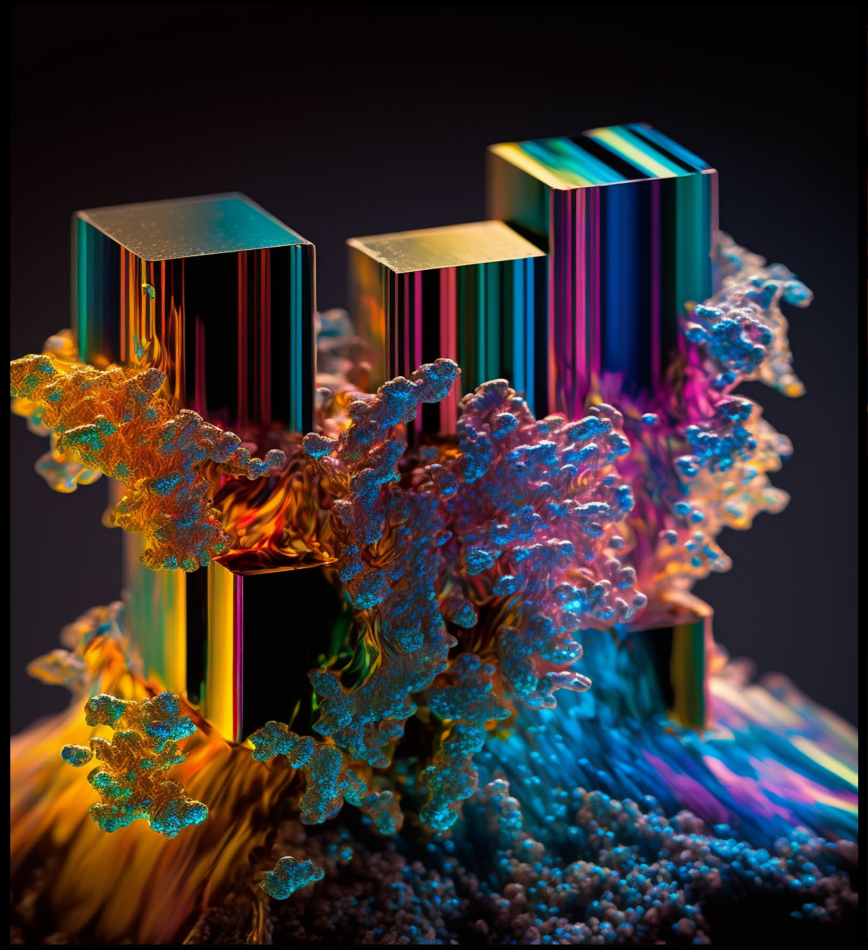
SQUARE FORMS, THE LAKHIYANA:

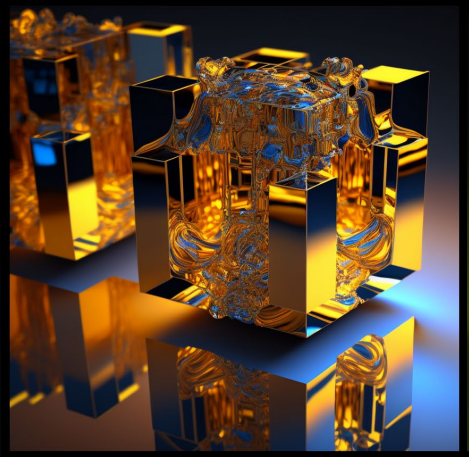
LARGE TRANSPARENT **CUBE** HANGING FROM CABLE FROM MIHRAB'S DOMED CEILING FILLED WITH PURPLE GAS AND HOLOGRAPHIC IMAGE OF AN INDIAN SCIENTIST'S FACE, SANSKRIT HOLOGRAM HUD DISPLAY, GIGER + VAN HERPEN + ZAHA HADID, 35MM, DRAMATIC PERSPECTIVE --AR 3:2 **[MIDJOURNEY 4]**

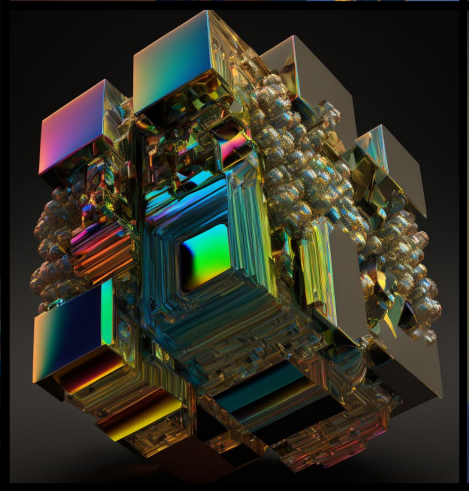
SQUARE FORMS, CRYSTAL TESTS:

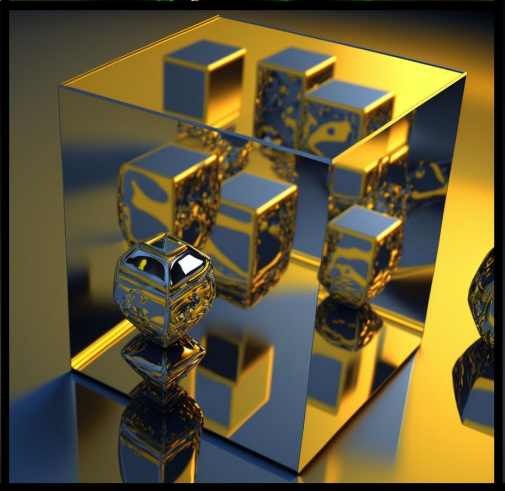
BISMUTH CRYSTALS EXPLODING VERTICALLY FROM A CHEMICAL GARDEN, REENTRANT PHASE TRANSITION IN HOLOGRAPHIC THERMODYNAMICS, SURREALIST, HYPERSPECTRAL IMAGING, SUPER-RESOLUTION MICROSCOPY, LONG EXPOSURE, PHOSPHOR DISPLAY --AR 2:3 **[MIDJOURNEY 4]**

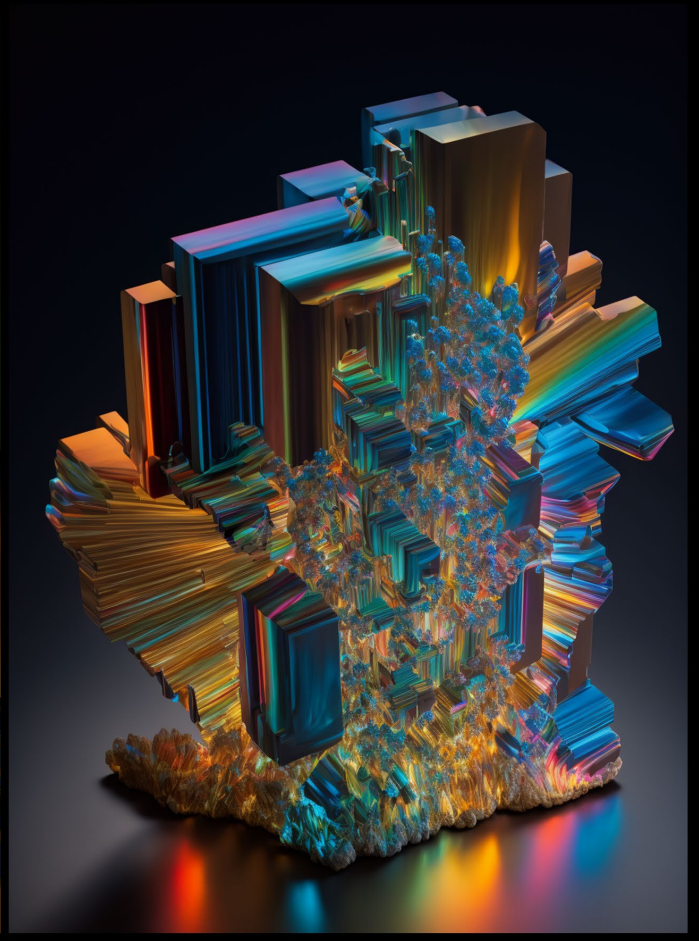
EDIFICE OF **BISMUTH CRYSTALS** SMASHED BY A WRECKING BALL SURROUNDED BY MIRRORS, REENTRANT PHASE TRANSITION IN HOLOGRAPHIC THERMODYNAMICS, SURREALIST, HYPERSPECTRAL IMAGING, SUPER-RESOLUTION MICROSCOPY, PHOSPHOR DISPLAY **[MIDJOURNEY 4]**











SQUARE FORMS, LORD OF THE LEGOS:

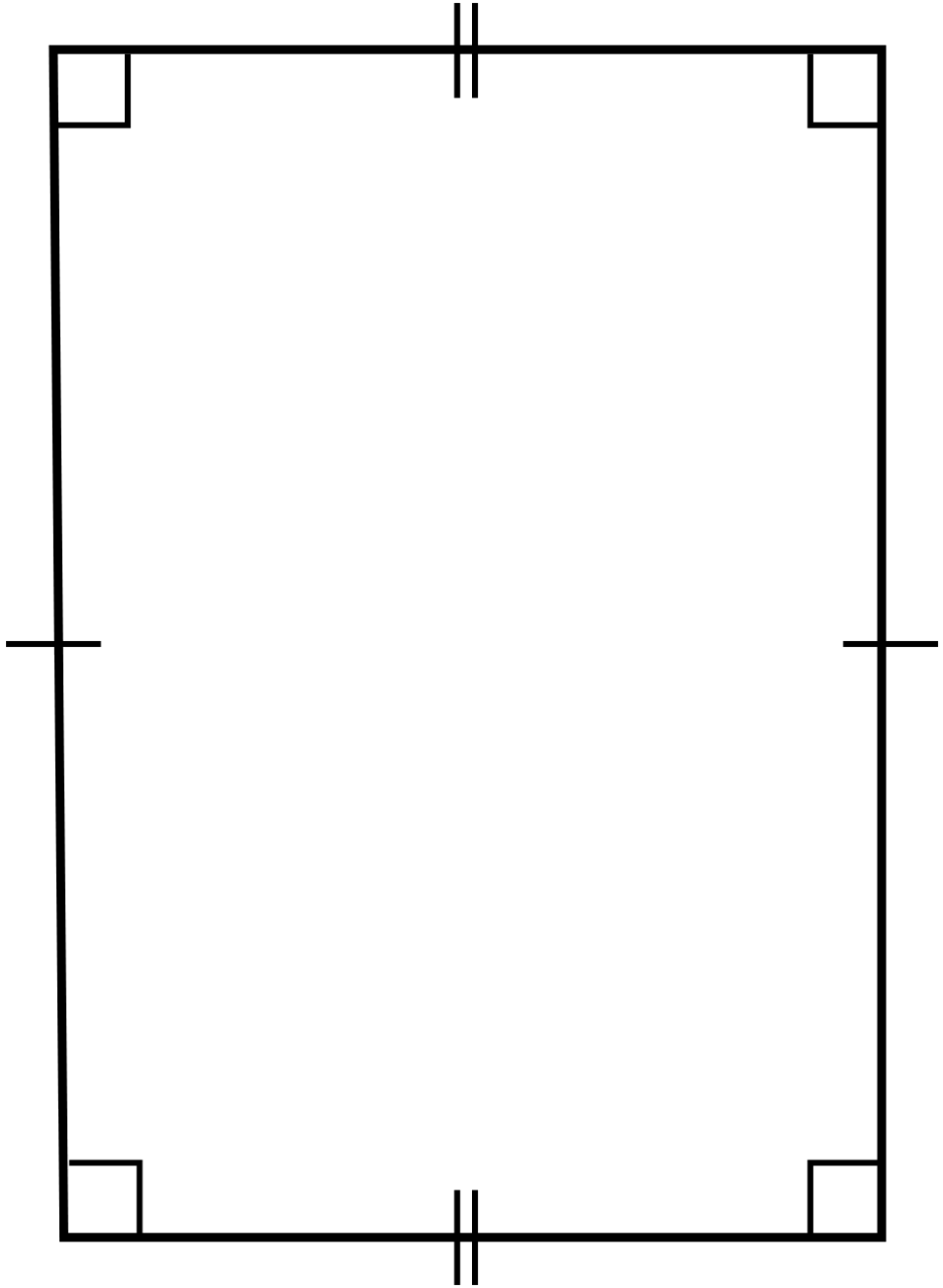
FRACTAL BILBO BAGGINS AT HOME IN RIVENDALE SMOKING PIPE WITH LEGS KICKED UP, PHOTO REAL, ESTABLISHING SHOT OF A **FRACTAL LEGO** LORD OF THE RINGS, STYLE OF CHUCK CLOSE + PENROSE TILING, GIRIH TILES, EXPONENTIALLY EXTRUDED FRAMING, INFINITE REGRESS, 2D TO 3D MIRRORED **4D TESSERACTS + DE STIJL** + RAY TRACING + REFLECTIVE SURFACES + SUBSURFACE SCATTERING + 8 BIT AESTHETIC+ BLUES INTERPOLATING TO GREENS --AR 2:1 **--SEED 4149608959 [MIDJOURNEY 5.1]**

The Rectangle

The **rectangle,** as a geometric form, boasts a rich history intertwined with the origins of human civilization. Its roots can be traced back to the early days of humanity, rooted in the innate human tendency to observe and mimic the rectangular shapes found in the natural world. This ubiquitous shape, defined by its four sides, each possessing equal length and opposite angles of equal measure, has transcended time.

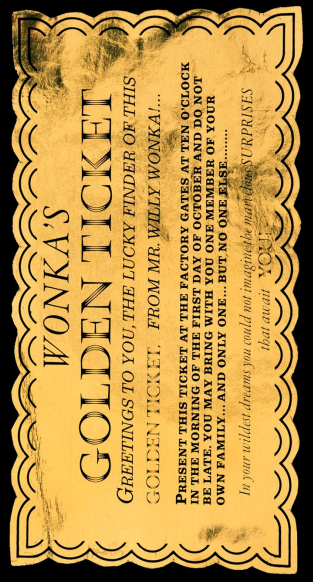
Throughout history, rectangles have left their mark on the realms of art and architecture. The ancient Egyptians and Mesopotamians, in particular, harnessed the power of the rectangle in their architectural marvels, employing it extensively in the construction of grand temples, soaring ziggurats, and iconic pyramids. The rectangle's allure lay in its stability and straightforward simplicity, qualities that resonate through the ages.

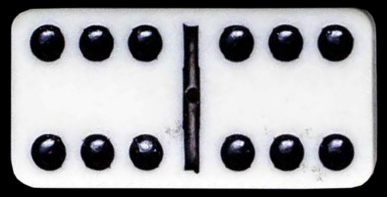
The rectangle's journey through the annals of art and design witnessed continuous evolution. Notably, during the Renaissance, the study of geometry and the advent of perspective elevated the significance of the rectangle. Artists of this era embraced the principles of symmetry and proportion, imbuing their works with rectangular compositions that would become emblematic of their time. This enduring fascination with the rectangle as a fundamental form underscores its enduring impact on human creativity and aesthetics.

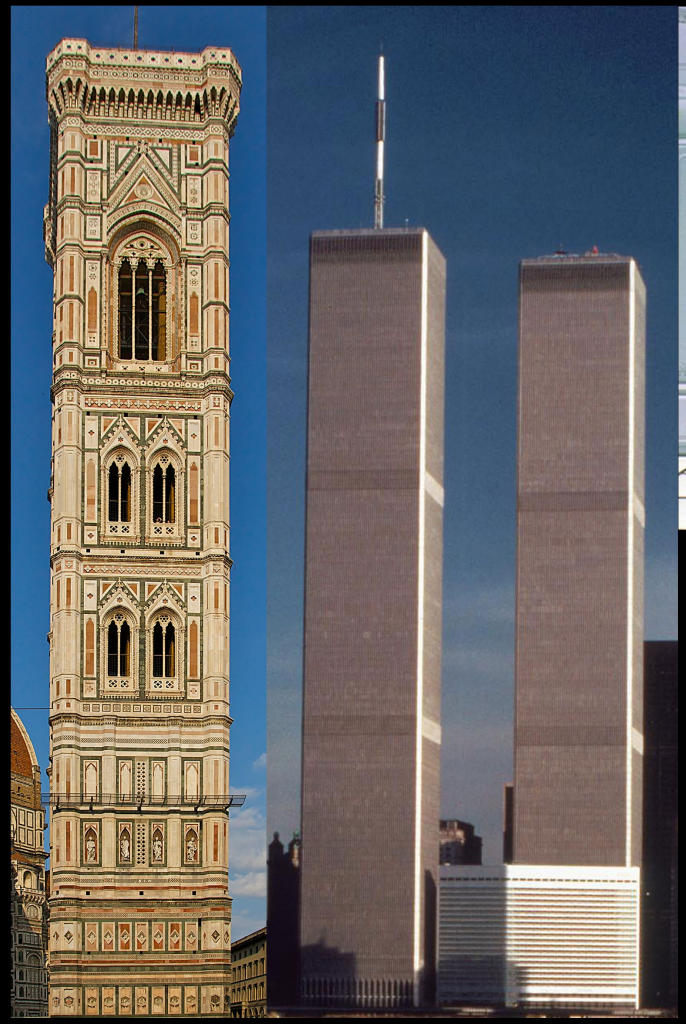


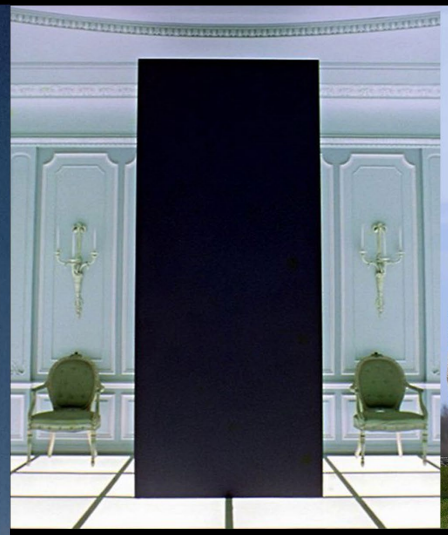
The Power of the Rectangle

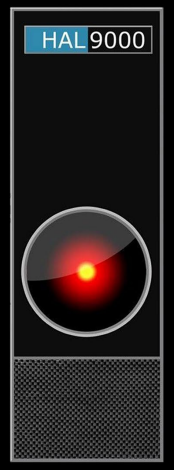
The **rectangle** is the cornerstone of the modern age. Its clean lines and right angles are the basis for architectural marvels, urban planning, and standardized product design. In technology, rectangular screens have revolutionized communication and entertainment. Graphic design, photography, and art rely on rectangles for framing and composition. This geometric shape epitomizes efficiency, balance, and functionality, making it an emblem of modern design's essence and adaptability.





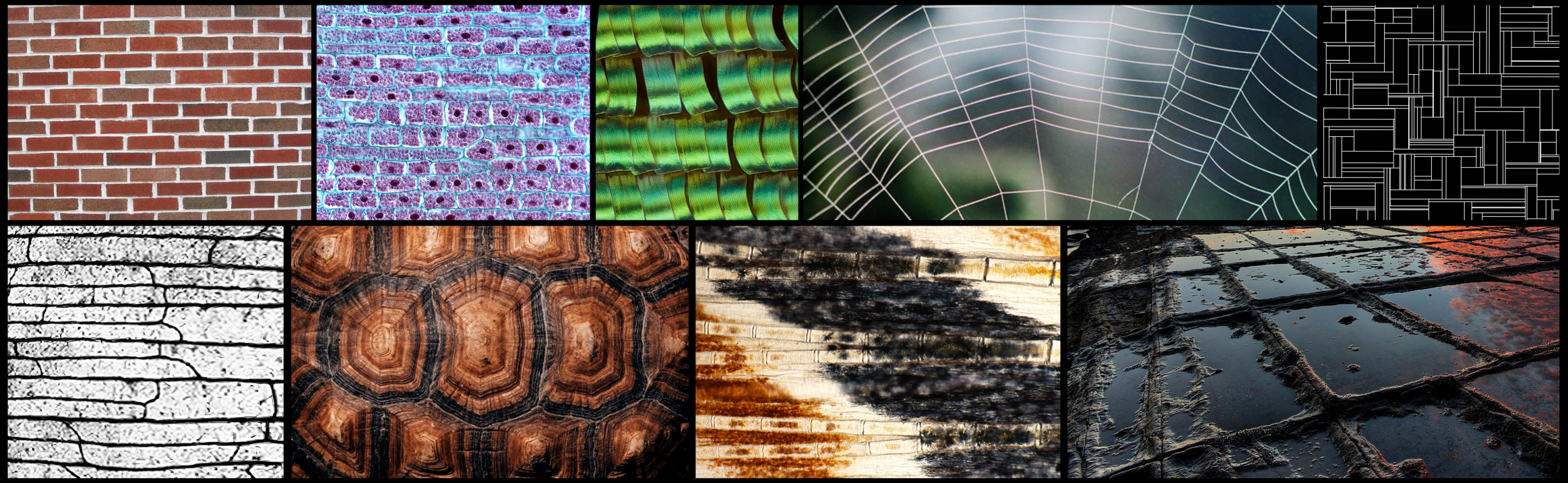






Rectangular Tessellations

Rectangular tessellation, characterized by shapes fitting together in a grid-like fashion, showcases its versatility across diverse natural phenomena and structures. Its most ubiquitous man-made form is exemplified by the **layering of bricks.** In the biological realm, rectangular tessellations hold significance. **Plant cells**, found within leaves, stems, and roots, adopt rectangular or elongated shapes, seamlessly forming tessellated patterns that optimize resource transport and structural support. This concept extends to rectangular **leaf venation** (bottom left image) in many plant species, enhancing nutrient and water distribution. The **wing scales of the sunset moth** feature rectangular tessellation patterns, serving both structural support and visual signaling. Similarly, **spider webs**, crafted by various spider species, reveal rectangular grid patterns in their structural support lines, showcasing the integration of rectangular tessellation into these intricate structures. **Gilbert tessellations** (top right image), a mathematical concept in stochastic geometry, employ randomly placed polygons, including rectangles, to model the distribution of objects like cells or urban structures, highlighting the utility of rectangular tessellation principles in understanding spatial distributions. **Tortoise shells** exhibit rectangular tessellation patterns through scutes, imparting structural strength and protection to these reptiles. The **fin of a zebrafish** demonstrates the functional role of rectangular tessellation in aquatic locomotion. Lastly, the **tessellated pavement** in the Tasman Peninsula, Australia, exhibits a geological marvel—a rectangular pattern of cracks and erosion on rock surfaces, showcasing how rectangular tessellation manifests on a large scale within the Earth's crust.



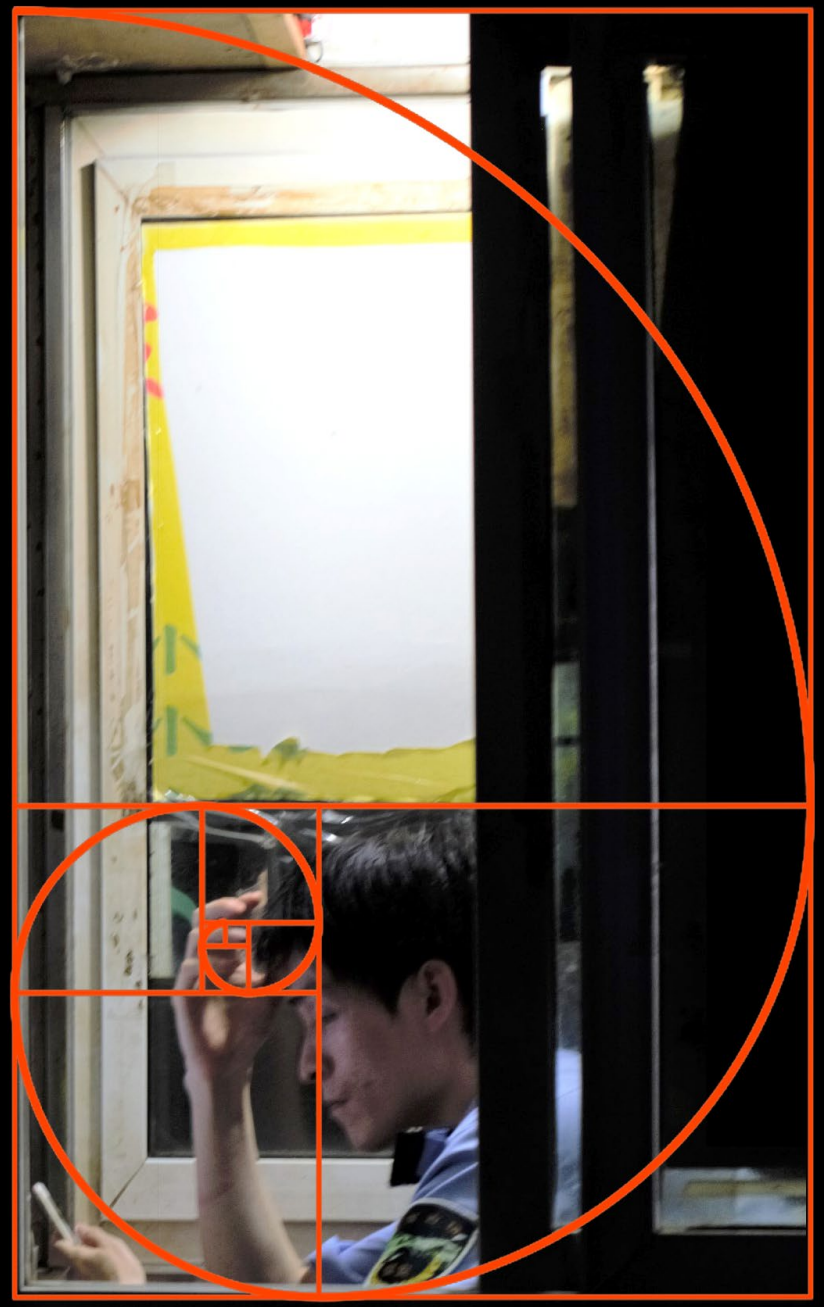
The Golden Rectangle

The **golden rectangle**, a geometric concept deeply intertwined with the **Golden Ratio**, holds profound significance in architecture, art, and photography due to its aesthetic and compositional appeal.

In **architecture**, the golden rectangle has been used to create harmonious and visually pleasing structures. Architects such as Le Corbusier and Frank Lloyd Wright incorporated the Golden Ratio into their designs, believing it offered a sense of balance and proportion that resonated with human perception. Buildings like the Parthenon in Athens exemplify the application of the Golden Ratio in classical architecture.

In **art,** the golden rectangle serves as a fundamental compositional tool. Artists use it to frame their subjects or to divide their canvases into aesthetically pleasing proportions. The Golden Ratio can create a sense of natural balance and draw viewers' eyes to specific focal points, enhancing the overall impact of a piece. Paintings like Leonardo da Vinci's "Mona Lisa" and Salvador Dali's "The Sacrament of the Last Supper" are believed to incorporate this ratio in their composition. Equiangular spirals, often related to the Fibonacci sequence and the Golden Ratio, also play a crucial role in composition. These spirals, seen in phenomena like nautilus shells and sunflowers, guide the eye through an image in a pleasing and dynamic manner.

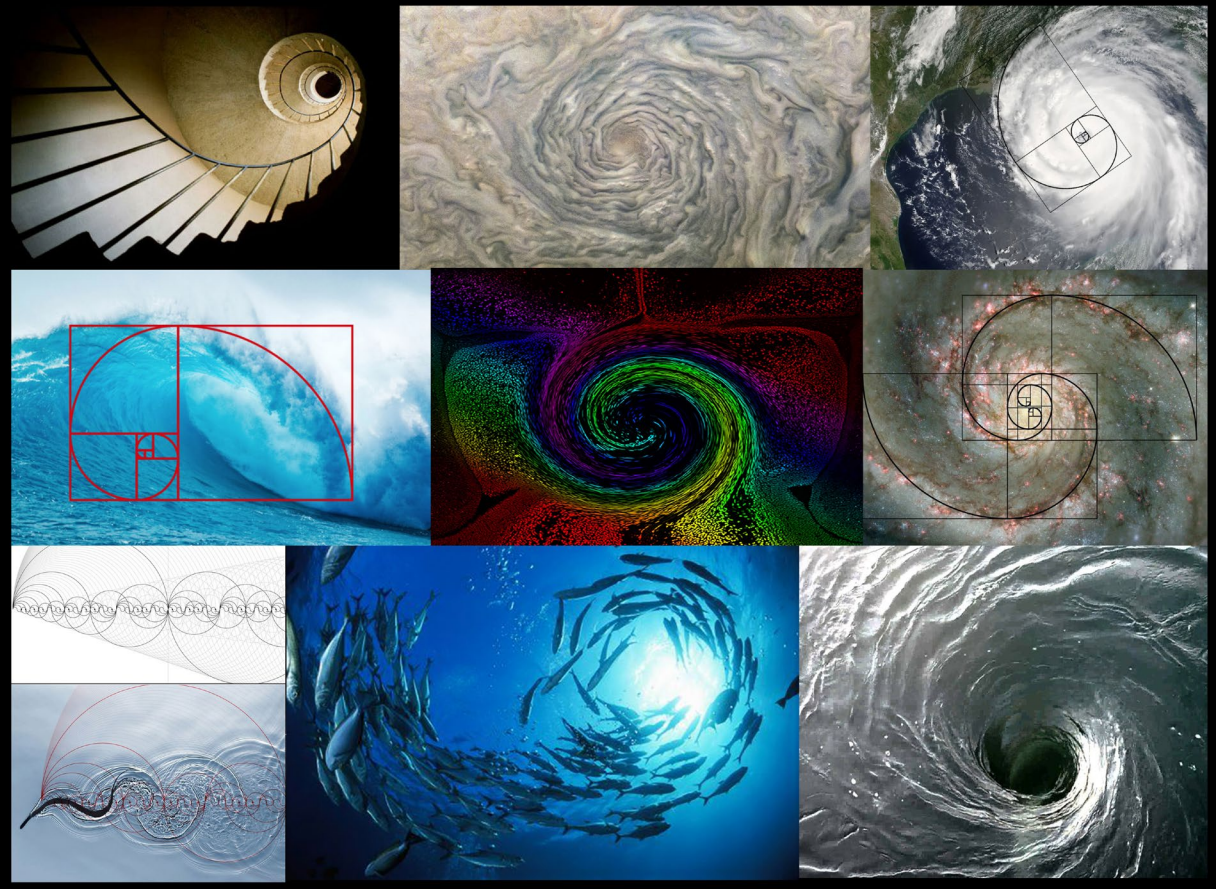
In **photography**, equiangular spirals can be used to arrange subjects or leading lines, adding a sense of movement and visual engagement to the frame. Photographers like Edward Weston and Henri Cartier-Bresson have employed these principles to create compelling compositions.



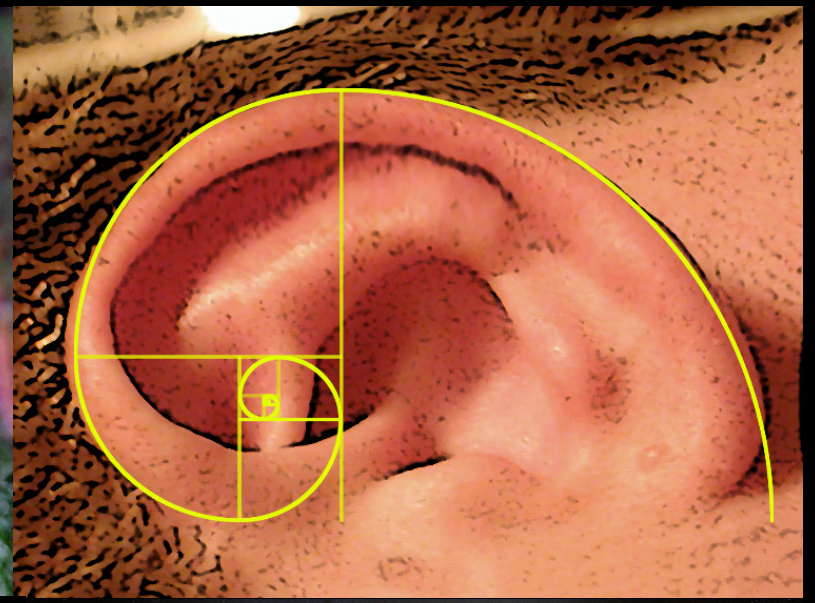
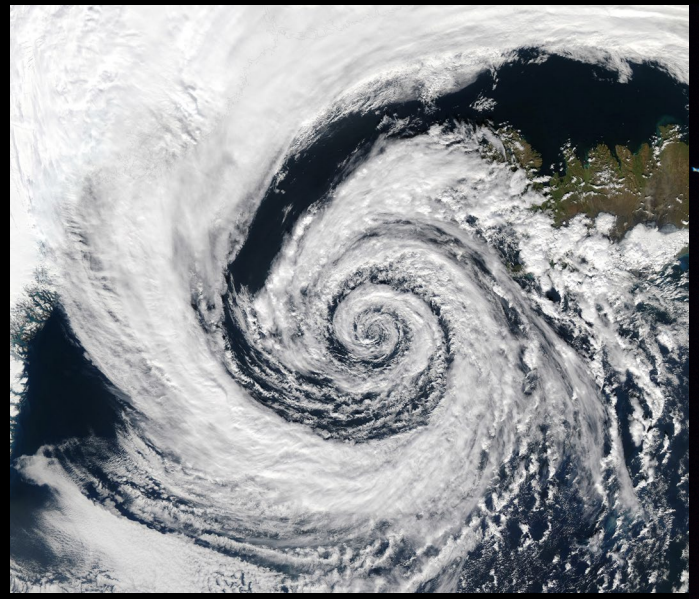
Qi Bao • 1129 x 1776 • Shanghai, China • 7.10.2018 • 400 ISO • 18 mm • Nikon DF • Jazno Francoeur

Logarithmic Spirals and the Golden Rectangle in Nature and Beyond

Logarithmic spirals, often exemplified by the **Fibonacci sequence** and the **Golden Ratio (Phi)**, are ubiquitous in the natural world due to their inherent efficiency and growth optimization. This mathematical pattern allows for the most efficient packing of objects and energy distribution, making it a prevalent choice in various natural phenomena. In plant growth, the arrangement of leaves, seeds, and branches often follows the Fibonacci sequence and logarithmic spirals, ensuring efficient exposure to sunlight and minimal competition for resources among plant parts. The same principles guide the formation of nautilus shells, which grow in a logarithmic spiral to maintain buoyancy and structural strength while conserving energy. In fluid dynamics, logarithmic spirals can be observed in turbulent flow patterns and vortex formation, optimizing energy transfer and minimizing turbulence. These spirals help maintain stability in natural systems. The connection to the Golden Rectangle and Phi arises from the fact that **the Golden Ratio is intimately linked to the Fibonacci sequence, and both play a role in the formation of logarithmic spirals.**





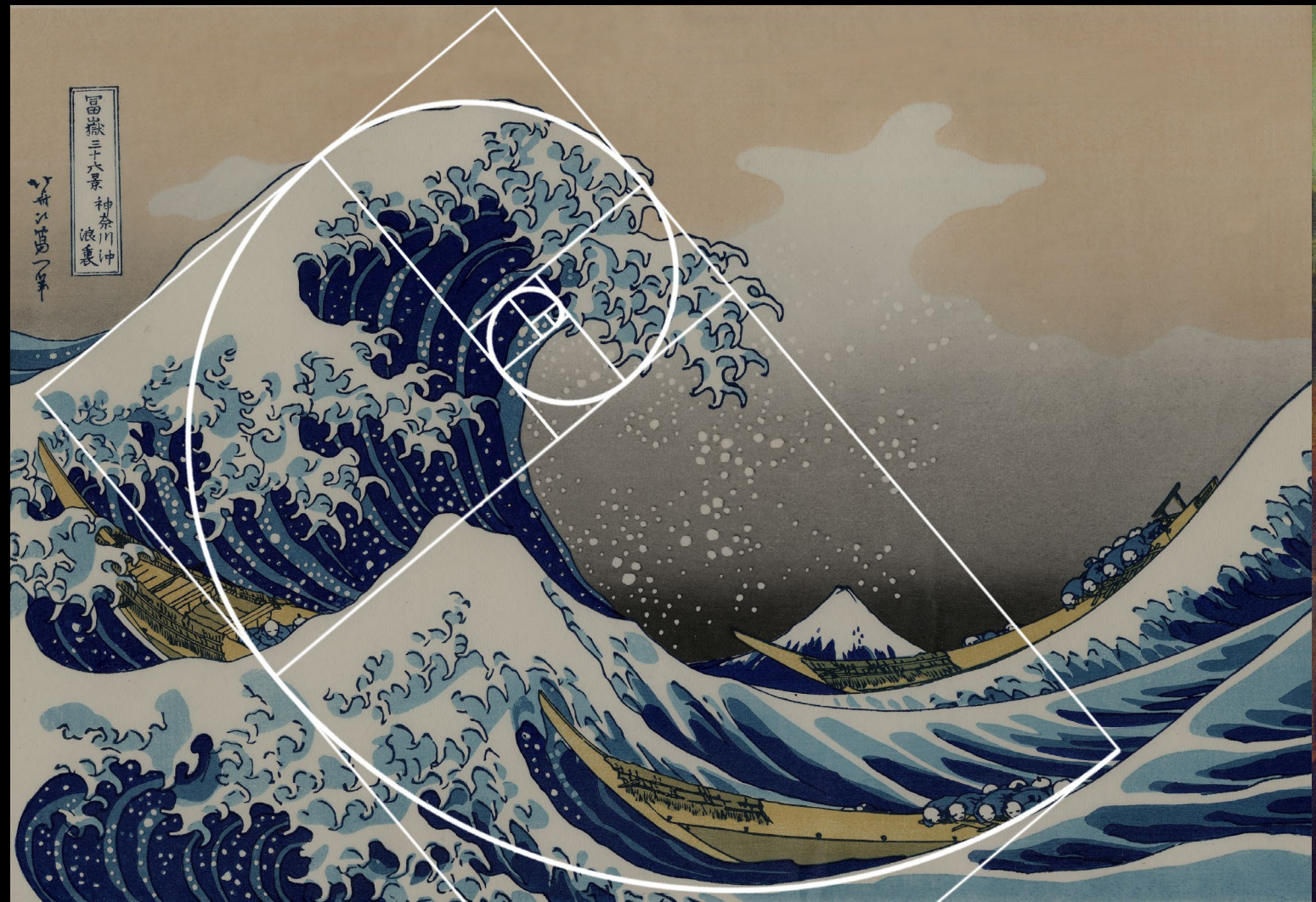



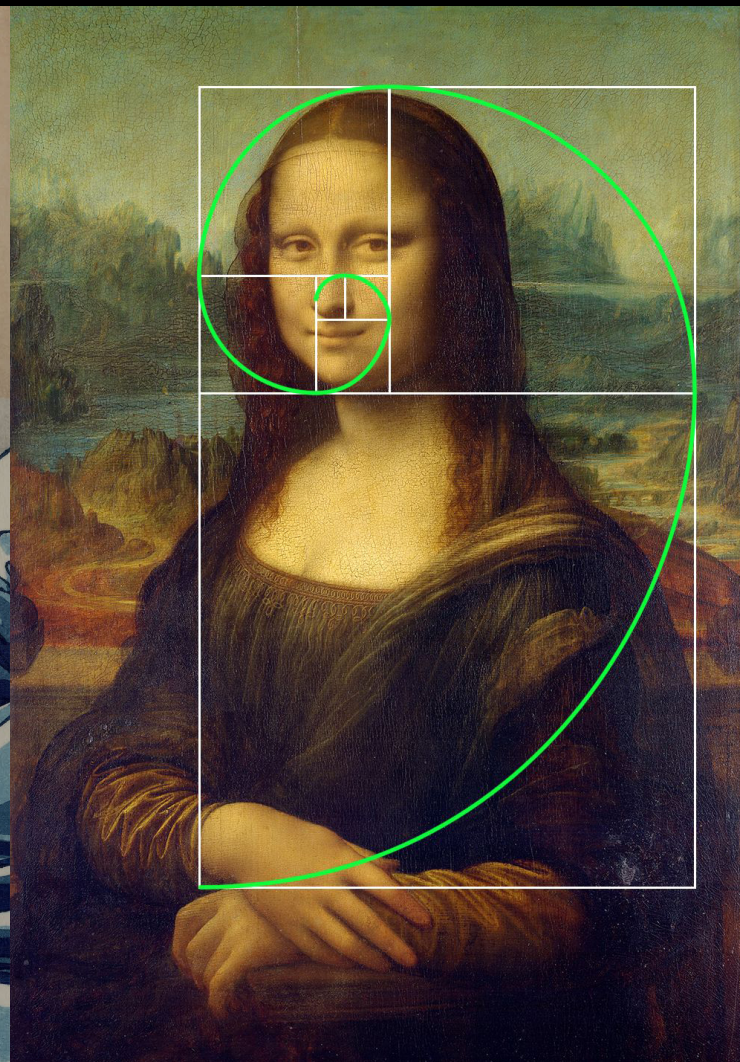
Equiangular spirals are seemingly everywhere

Logarithmic Spirals and the Golden Ratio

https://en.wikipedia.org/wiki/Mona_Lisa
https://en.wikipedia.org/wiki/The_Great_Wave_off_Kanagawa

The Golden Ratio, a mathematical proportion often approximated as 1.618, is a fundamental design principle in art. It guides the placement and proportions of elements within a composition to create aesthetically pleasing and balanced visuals. Artists use this ratio to determine the size and spacing of subjects or objects within their work, ensuring harmonious and visually engaging results. It can be seen in the proportions of human figures, the placement of focal points, and the dimensions of canvases or frames. The Golden Ratio's application in art serves to captivate viewers' eyes, enhance composition, and evoke a sense of natural balance, making it a timeless and influential tool for artists across various mediums and styles.

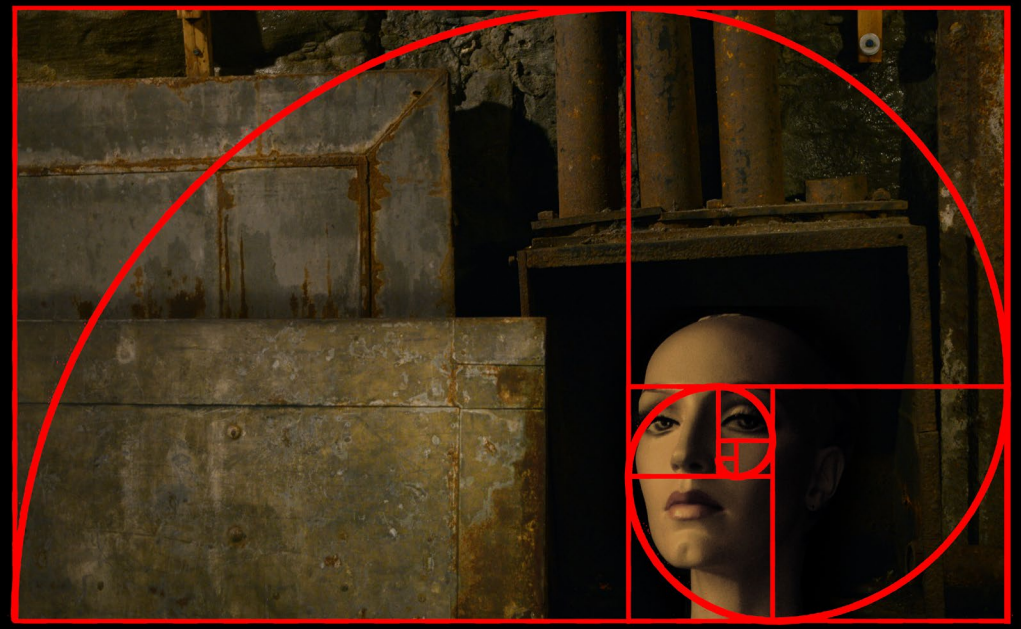




Using Spirals to Create Focus

Logarithmic spirals and the **golden rectangle** are powerful tools for creating visual emphasis and guiding the viewer's eye in a composition. By strategically placing focal points along the spiral's path within a golden rectangle, you can naturally draw attention to specific areas. The logarithmic spiral's continuous curvature provides a seamless journey for the eye, enhancing the composition's flow. This technique, rooted in mathematical proportions and natural aesthetics, offers a harmonious and visually pleasing way to lead the viewer's gaze and create a compelling focal point. Whether in art, design, or photography, this approach adds depth and engagement to your work, enhancing the overall impact and storytelling capability.

http://jazno.net/#/portfolio/mannequins/veronica-returns/0

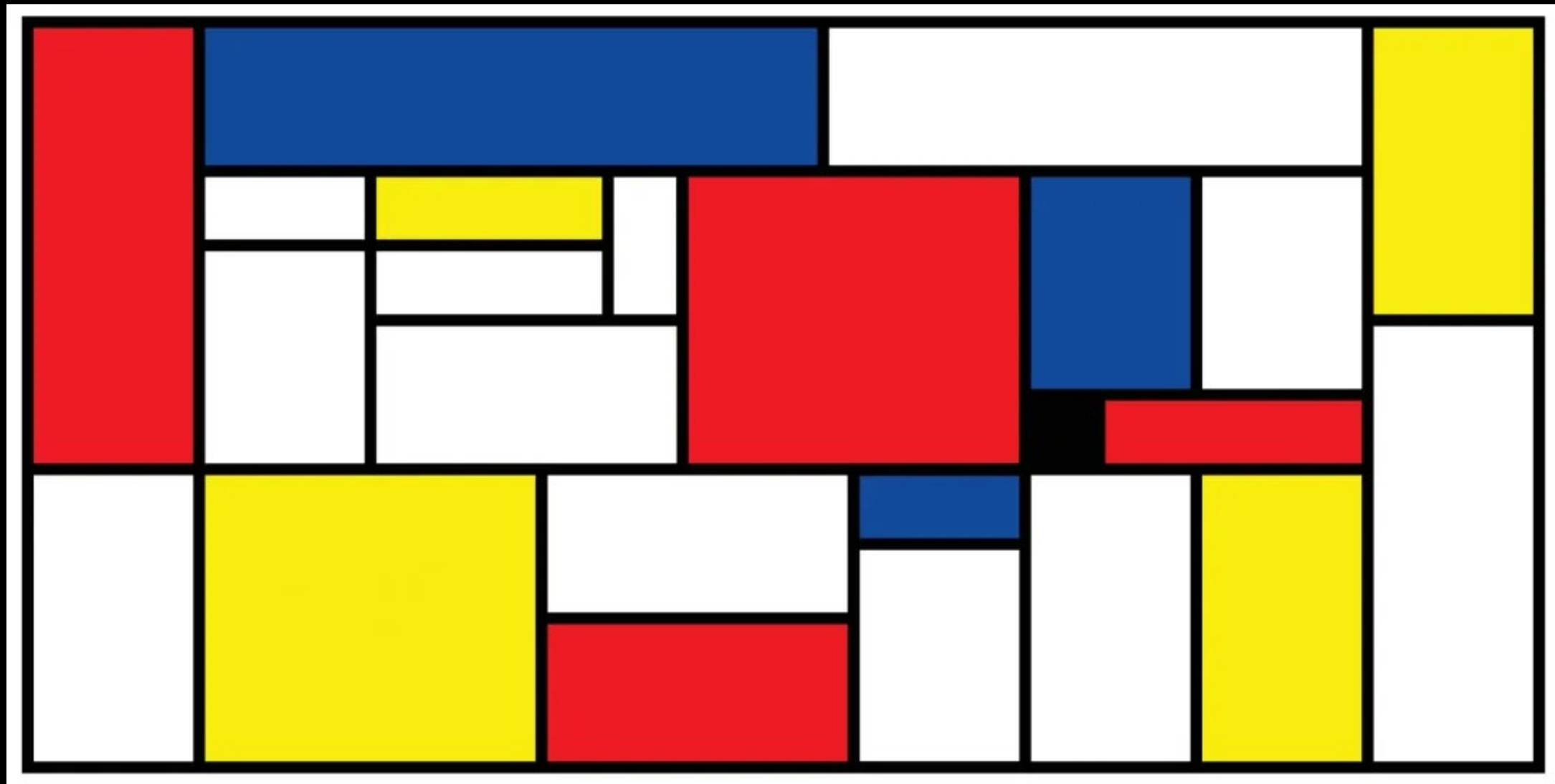


The Rectangular Format

Aspect ratios, based on the **rectangular format**, are powerful tools in visual arts. The rectangular shape aligns with our natural field of view, making it intuitive for viewers. This aspect ratio provides a balanced canvas for composition, enhancing storytelling and aesthetics. In cinema, it facilitates immersive storytelling by framing scenes harmoniously. In photography, it allows photographers to capture scenes effectively. Aspect ratios are essential for conveying narratives, emotions, and artistic visions. ***Note: the 10:39 and 39:10 images are cropped for clarity.***

PIET MONDRIAN, RECTANGULAR SHAPES:

"THE COLORED PLANES, AS MUCH BY POSITION AND DIMENSION AS BY THE GREATER VALUE GIVEN TO COLOR, PLASTICALLY EXPRESS ONLY RELATIONSHIPS AND NOT FORMS. IT IS POSSIBLE THAT, THROUGH ***HORIZONTAL AND VERTICAL LINES*** *CONSTRUCTED WITH AWARENESS, BUT NOT WITH CALCULATION, LED BY HIGH INTUITION, AND BROUGHT TO HARMONY AND RHYTHM, THESE BASIC FORMS OF BEAUTY, SUPPLEMENTED IF NECESSARY BY OTHER DIRECT LINES OR CURVES, CAN BECOME A WORK OF ART, AS STRONG AS IT IS TRUE."* ***HTTPS://EN.WIKIPEDIA.ORG/WIKI/PIET_MONDRIAN***

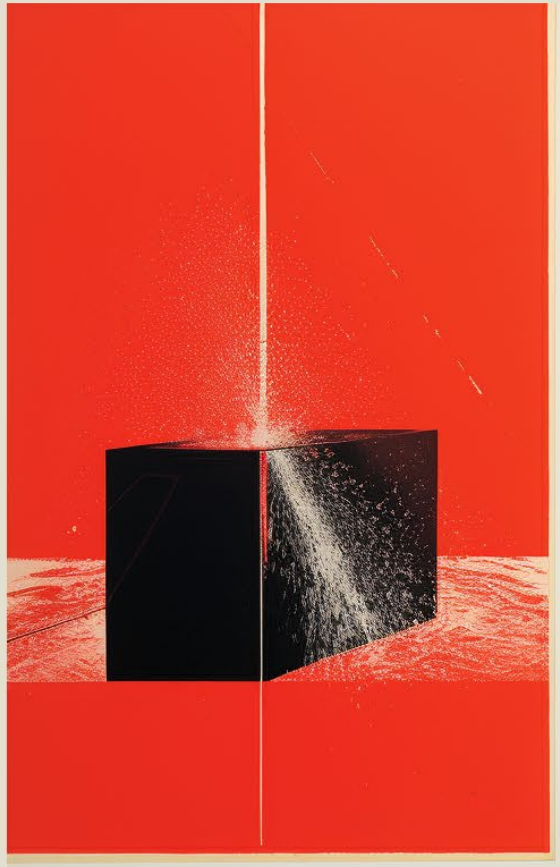


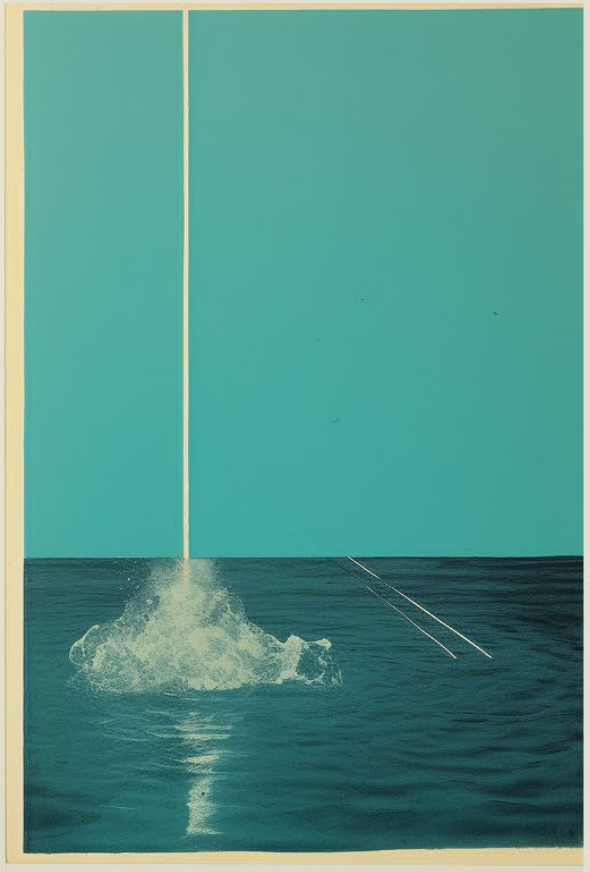
RECTANGULAR SHAPES, LINEAR WATER EXPLORATIONS:

RECTILINEAR WATER SPLASH MADE UP OF **RECTANGULAR SHAPES**, GRAPHICAL, WOODBLOCK PRINTS, ROTHKO, FRANCIS BACON, DIEBENKORN --AR 2:1 **[MIDJOURNEY 5.2]**

RECTANGULAR SHAPES, LINEAR WATER EXPLORATIONS:

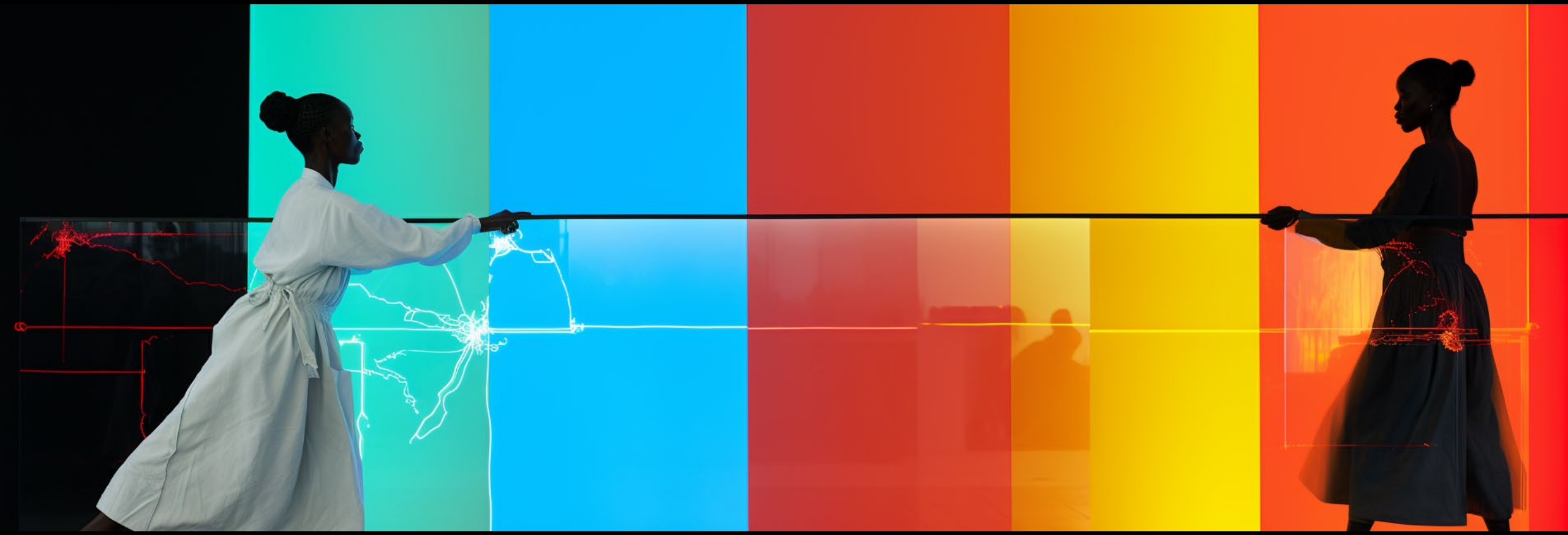
RECTILINEAR WATER SPLASH MADE UP OF **RECTANGULAR SHAPES**, GRAPHICAL, WOODBLOCK PRINTS, ROTHKO, FRANCIS BACON, DIEBENKORN
--AR 2:1 **[MIDJOURNEY 5.2]**






RECTANGULAR SHAPES, THE ART OF PURPOSEFUL COINCIDENCE:

STYLE OF CONFOCAL LASER SCANNING MICROSCOPE, WHITE PAPER TORN IN RUSSIAN **CONSTRUCTIVIST SHAPES** EMERGING 2D TO 3D REVEALING AFRICAN DANCER CONTAINED IN KARA WALKER SILHOUETTES, ELECTROLUMINESCENCE, RAINBOW EXTRACTION, FRANZ KLEIN, DIEBENKORN, EXTREME CLOSE-UP --AR 3:1 **[MIDJOURNEY 5.2]**



RECTANGULAR SHAPES, THE ART OF PURPOSEFUL COINCIDENCE:

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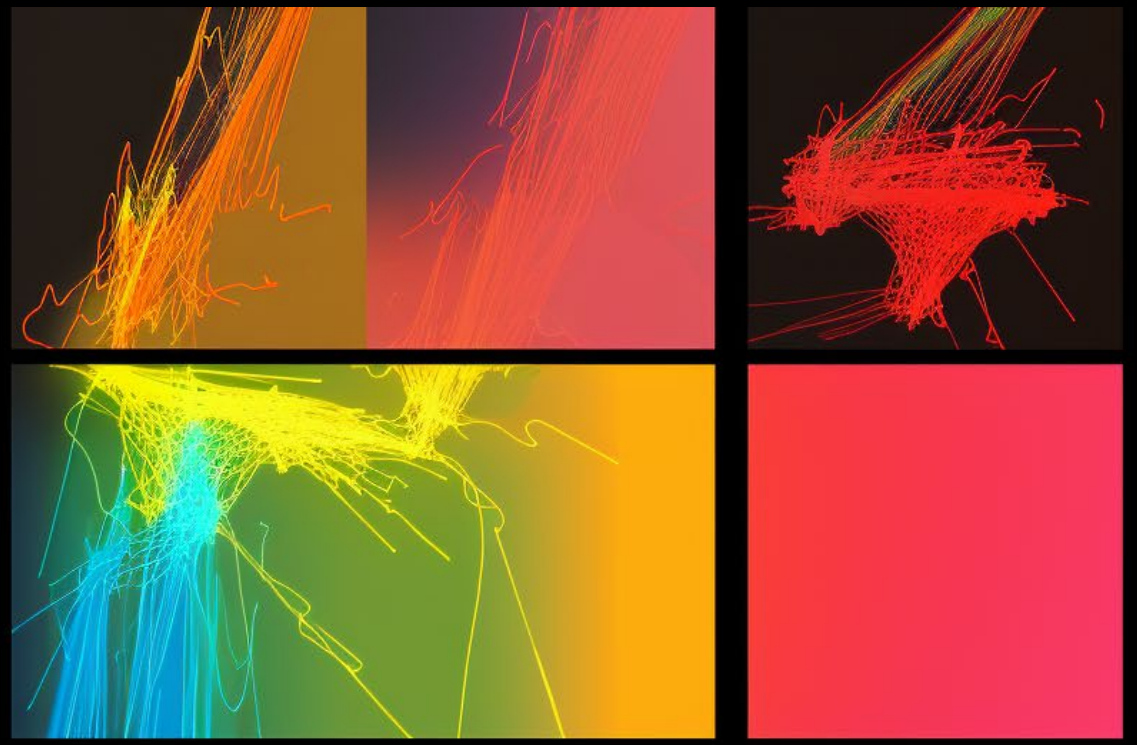
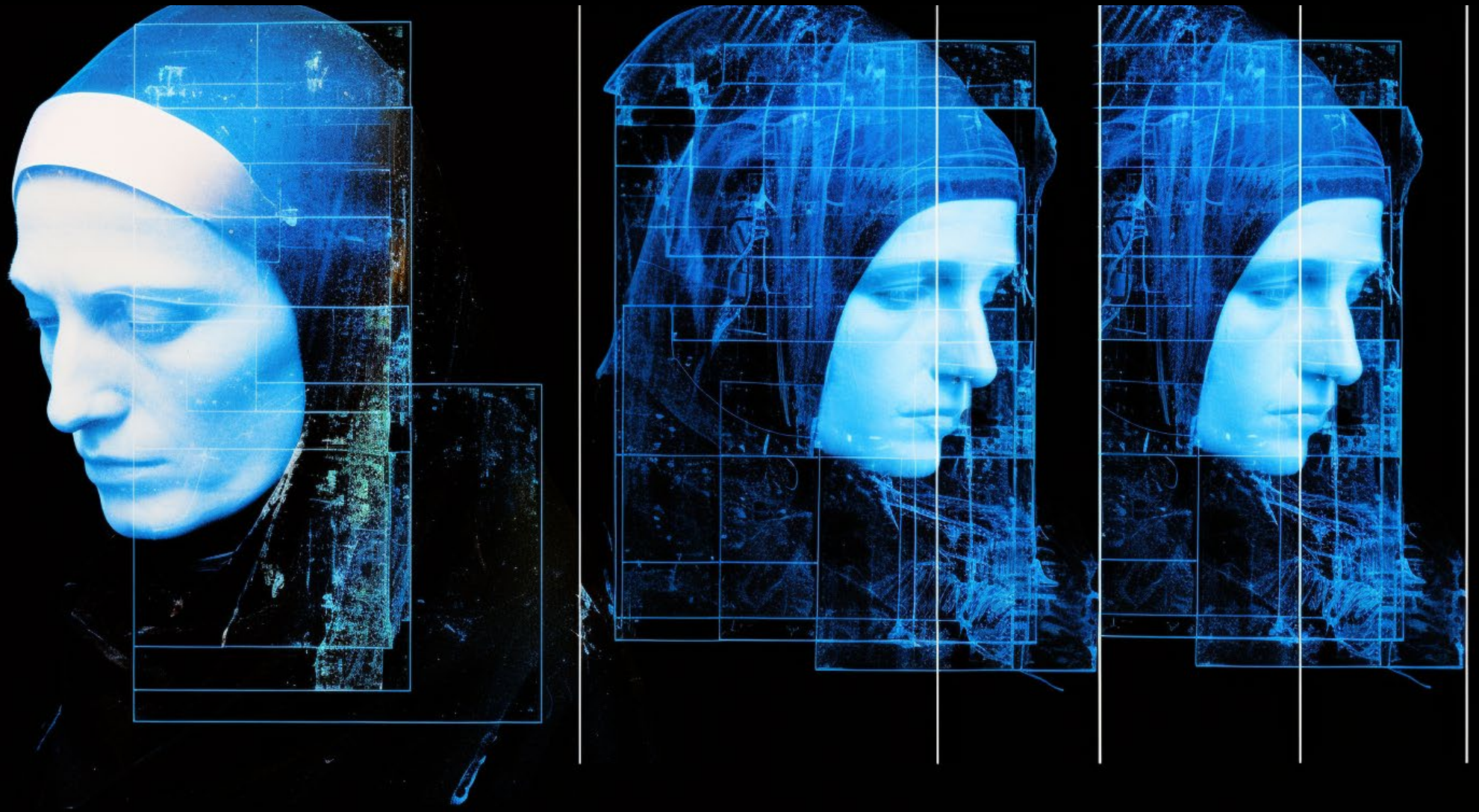


RECTANGULAR SHAPES, THE ART OF PURPOSEFUL COINCIDENCE:

STYLE OF CONFOCAL LASER SCANNING MICROSCOPE PHOTOGRAPHY, WHITE PAPER TORN IN RUSSIAN **CONSTRUCTIVIST SHAPES** REVEALING AFRICAN QUEEN UNDERWATER CONTAINED IN KARA WALKER SILHOUETTES, KEHINDE WILEY, ELECTROLUMINESCENCE, CLOSE-UP, BASQUIAT --AR 2:1 **[MIDJOURNEY 5.2]**

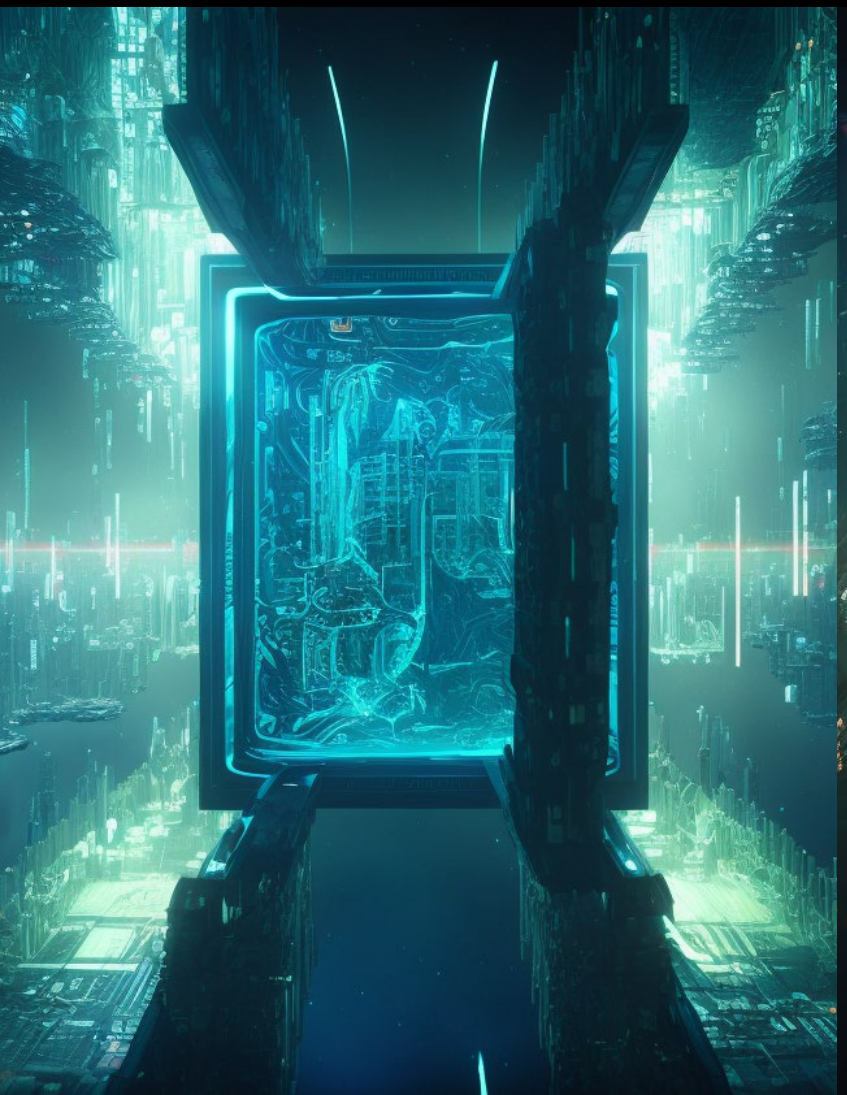
RECTANGULAR SHAPES, HAMMER OF GOD:

COLLOIDON PROCESS PRINT, NEGATIVE, INVERTED COLORS, FRANCIS BACON + PAULA SCHER STYLE, DESICCATED NUN MADE OF EXTRUDED HOLOGRAPHIC CHLADNI PLATES, CONTRE JOUR,EXTRUDED FIBER OPTICS, KULESHOV EFFECT, LINOCUT, MOVE POSTER MONTAGE, MONOCHROMATIC, ANDROID MODEL IN PROFILE, EXTRUDED **DE STIJL LAYERS**, VAN HERPEN --AR 2:1 **[MIDJOURNEY 5.2]**



RECTANGULAR FORMS, THE LAKHIYANA:

¾ BIRD'S EYE VIEW OF A **RECTANGULAR** TELEPORTATION GATE OVER FUTURISTIC SHENZHEN MATERIALIZING ARMADA OF HOLOGRAPHIC SPACECRAFT MOVING THROUGH INFINITE REGRESSION OF EXTRUDED BLUE & GREEN RECURSIVE ARCHIMEDEAN EDDIES INFUSED WITH FIERY LICHTENBERG FIGURES, STYLE OF BLADE RUNNER 2049 AND ZAHA HADID, BURNING CIRCUITS, HUD DISPLAY WITH HOLOGRAPHIC CHINESE CHARACTERS, ELLIPTICAL LENS FLARE, HASSELBLAD --AR 1:2 **[MIDJOURNEY 4]**



RECTANGULAR FORMS, THE LAKHIYANA:

3D HOLOGRAMS OF SPACE SHIPS PROJECTED IN LIGHT FROM BIZARRE **INTERACTIVE TABLETS** FROM THE FUTURE IN THE STYLE OF BLOMKAMP, VAN HERPEN, 85-MM-LENS, SHARP-FOCUS, INTRICATELY-DETAILED DIFFUSE-BACK-LIGHTING, LOW-CONTRAST, HIGH-SHARPNESS, --AR 3:2 **[MIDJOURNEY 4]**

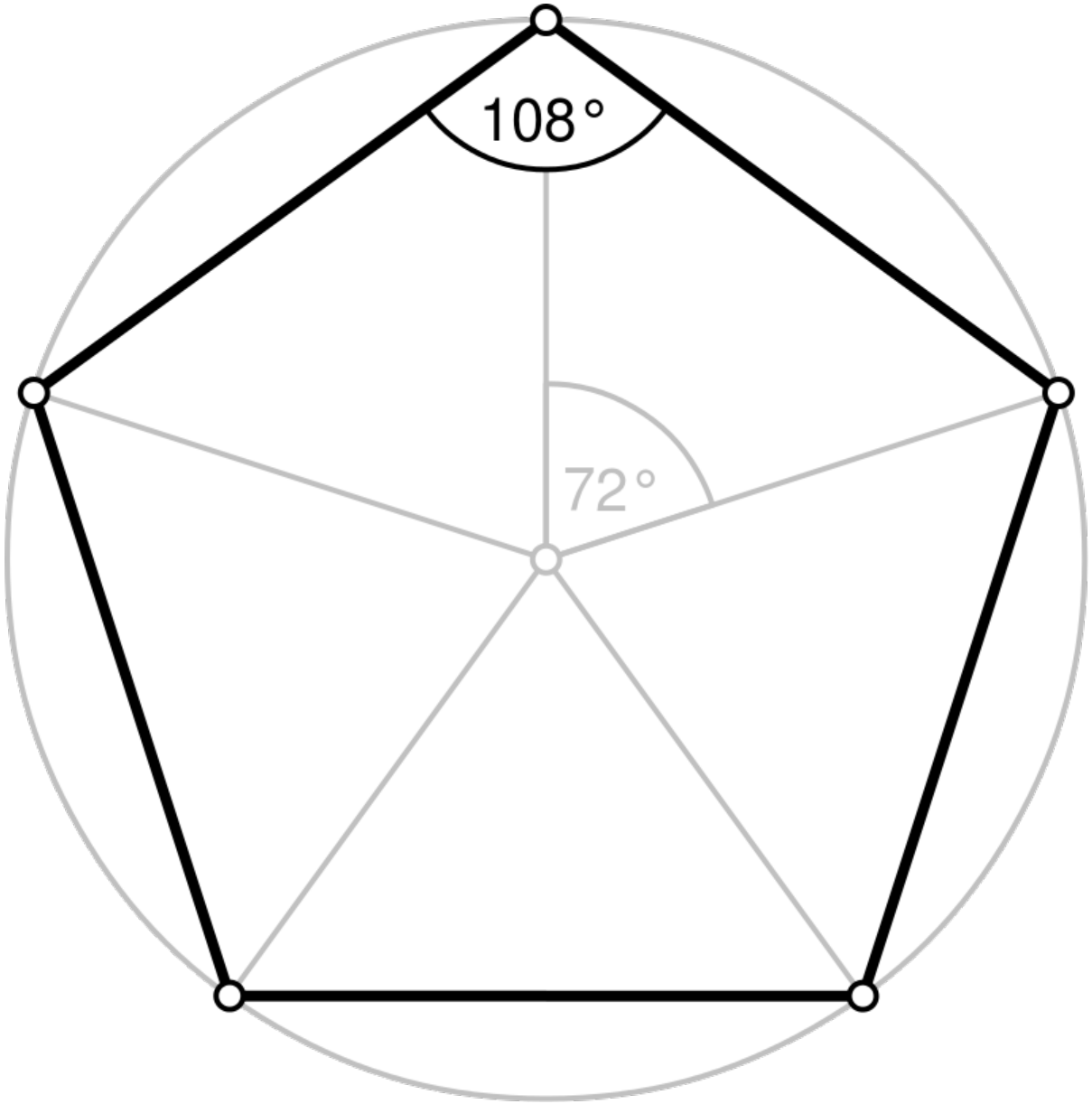
BIZARRE **INTERACTIVE TABLETS** FROM THE FUTURE IN THE STYLE OF GIEGER AND BLOMKAMP WITH LARGE BLANK SCREEN, VAN HERPEN, 85-MM-LENS, SHARP-FOCUS, DIFFUSE-BACK-LIGHTING, LOW-CONTRAST, HIGH-SHARPNESS --AR 3:2 **[MIDJOURNEY 4]**

The Pentagon

The term **"pentagon"** traces its origins back to ancient Greece, where it played a significant role in both philosophy and religion. In geometry, the pentagon was one of the five "Platonic solids" recognized by Plato, representing the element of water and symbolizing the universe's harmony and perfection. This association with philosophical concepts of symmetry and proportion persisted through the works of mathematicians like Euclid.

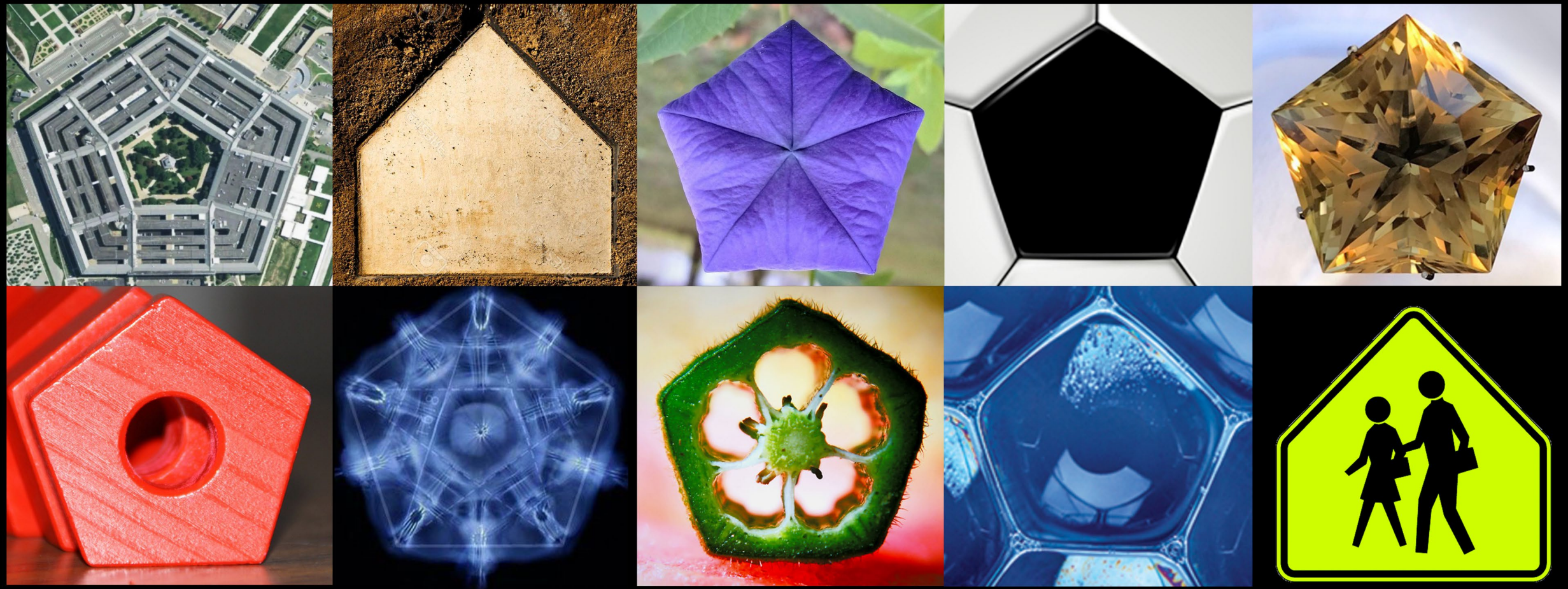
In the realm of religion, the pentagon held symbolism in various cultures. In ancient Egypt, it was linked to the goddess Isis, representing the concept of divine femininity and motherhood. In Christianity, the pentagon's five points were associated with the five wounds of Christ, making it a symbol of protection and spiritual significance.

Fast forward to modern times, and the Pentagon takes on an entirely different meaning. The Pentagon, located in Arlington, Virginia, is the headquarters of the United States Department of Defense. Constructed during World War II, it symbolizes the might and influence of the U.S. military on the global stage. It has since played a central role in shaping American foreign policy, making it a symbol of military power and strategic decision-making.



The Power of the Pentagon

The **pentagon**, a five-sided geometric figure, holds a notable presence in the natural world, and its adoption by humans in various creative fields is a testament to its mathematical allure and aesthetic versatility. In nature, pentagons emerge due to their inherent stability and efficiency. They can be found in the arrangements of leaves on certain plants, the crystalline structures of minerals, and even the orbits of some celestial bodies, showcasing their adaptability to diverse environments. Humans have embraced the pentagon's unique attributes in design, architecture, photography, and fine art. Its five equal sides and angles offer a harmonious blend of symmetry and asymmetry, leading to aesthetically pleasing and structurally robust creations. In architecture, pentagonal shapes can be seen in building facades and floor plans, providing both visual interest and stability. Photographers and artists often employ pentagons as striking compositional elements, drawing on the shape's innate intrigue.

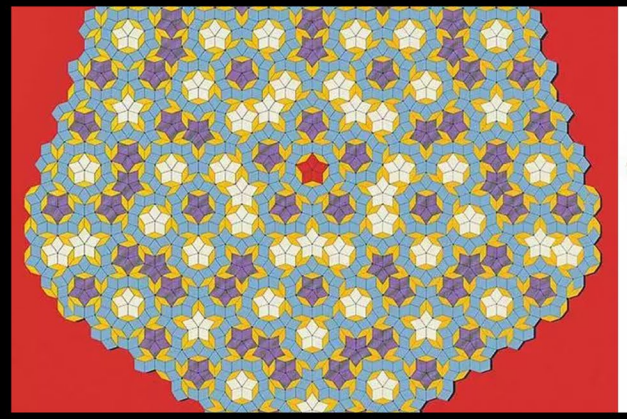


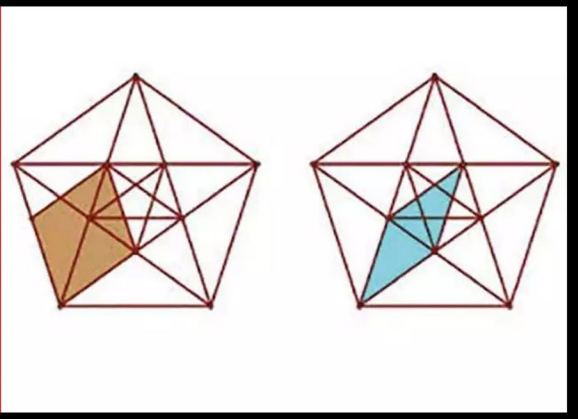
Pentagons and Aperiodic Tessellation

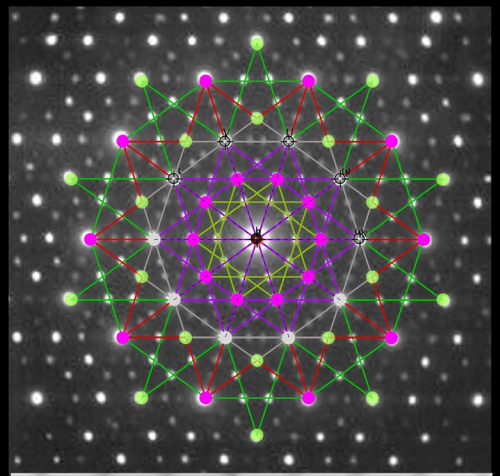
Pentagons, with their five sides and angles, play a unique role in the world of **aperiodic tessellations,** notably exemplified in Penrose tiling. Unlike regular tessellations found in hexagons or squares, aperiodic tessellations never repeat the same pattern, creating intriguing designs with pentagons at their core.

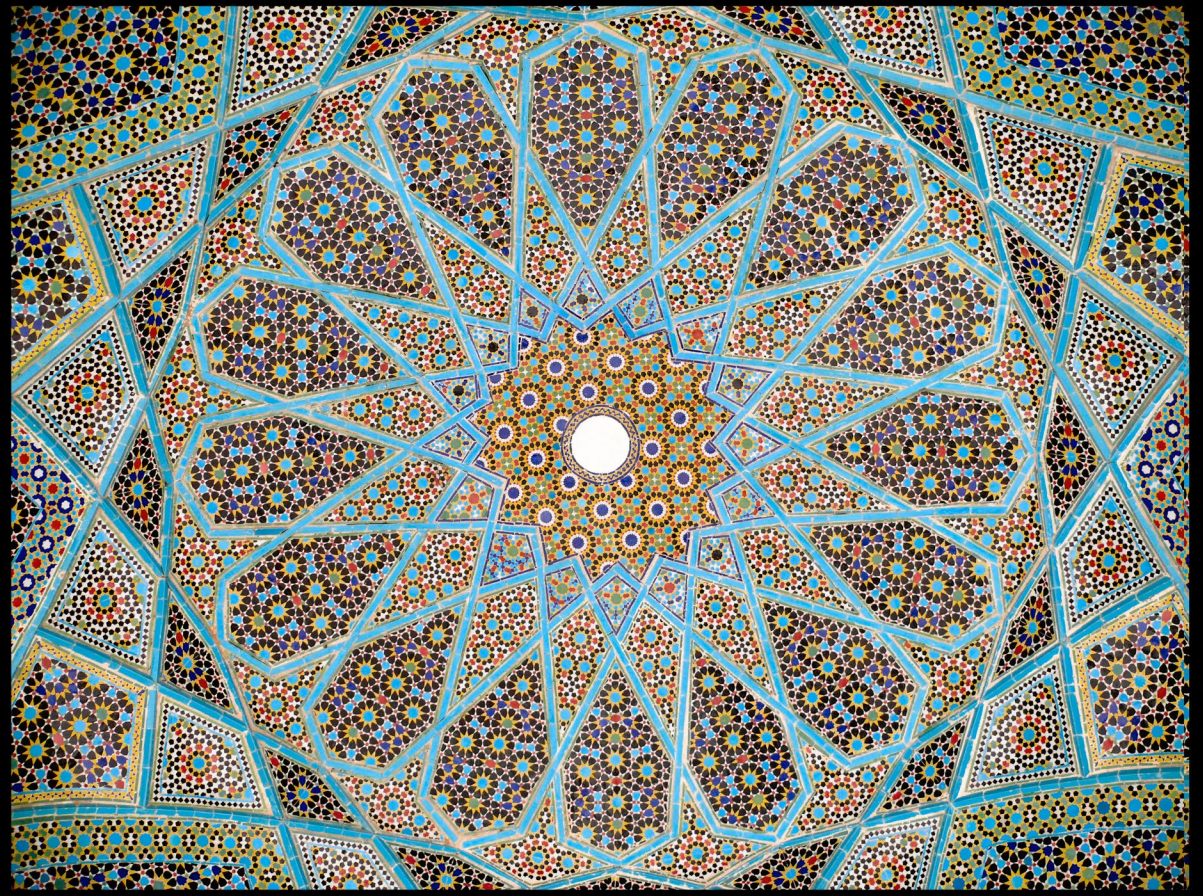
Penrose tiling, discovered by Sir Roger Penrose in the 1970s, features a set of five distinct pentagonal shapes that can be combined in various ways to create a non-repeating pattern. These tilings exhibit remarkable properties related to symmetry and **quasicrystals,** bridging the gap between order and randomness in mathematics and materials science.

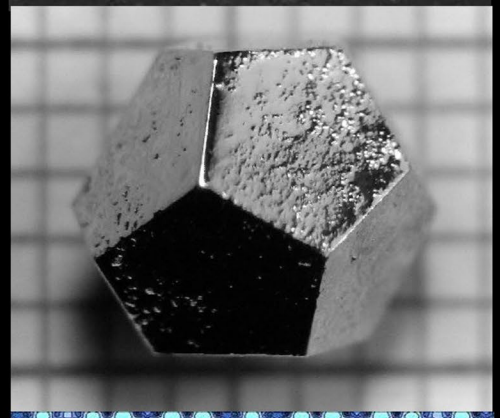
Girih tiles are a set of five geometric shapes used in Islamic art to create complex, non-repeating patterns. These tiles bear a striking resemblance to the pentagonal shapes found in Penrose tiling, highlighting a historical connection between Islamic art and modern mathematical concepts in aperiodic tessellations.

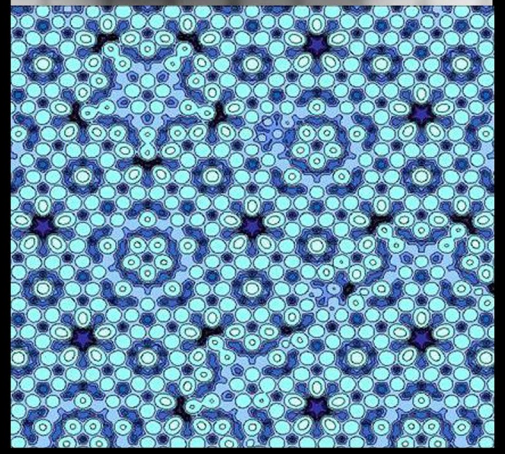










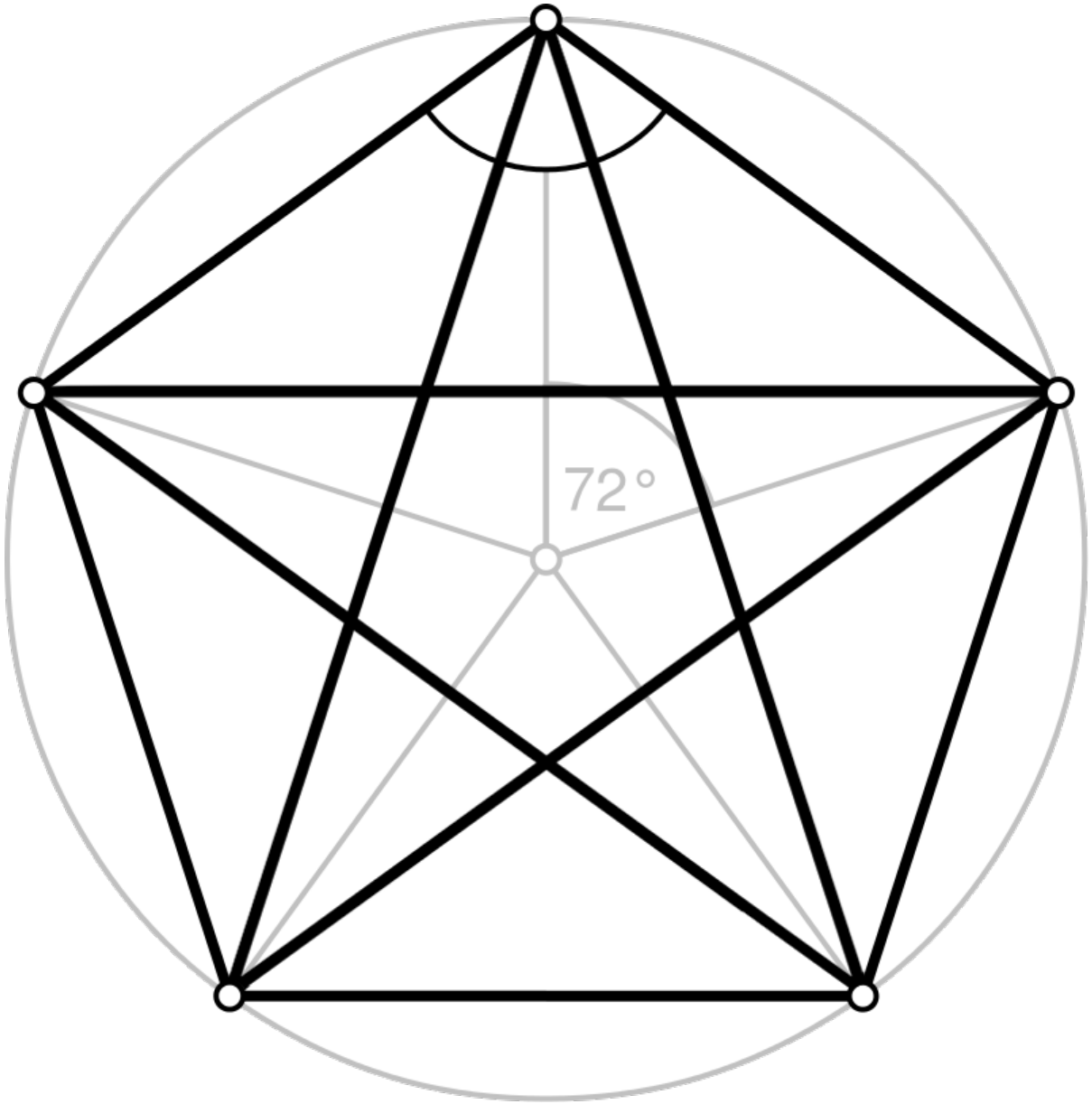


The Pentagram

The **pentagram**, a five-pointed star enclosed within a pentagon, holds significant geometric and historical importance. **Geometrically, it embodies the mathematical and aesthetic beauty of the Golden Ratio**, as the ratio of its side length to the length of its longer diagonal approximates φ (phi), an irrational number approximately equal to 1.618. This ratio has been revered in art, architecture, and nature for its harmonious proportions.

Historically, the pentagram has a rich and diverse legacy. It dates back over 4,000 years and has been found in various cultures worldwide. In ancient Greece, it symbolized the five elements (earth, water, air, fire, and ether) and was associated with health and vitality. In Mesopotamia, it represented the goddess Ishtar. In medieval Europe, it was linked to protection against evil and was often inscribed within magical circles.

The pentagram's most enduring association is with occultism and spirituality. In the 19th century, it became a symbol of magic and mysticism, notably in the works of occultist Aleister Crowley. Additionally, it has been adopted by modern Wicca and neo-pagan traditions as a symbol of spirituality and the elements.



PENTAGONAL SHAPES, CERAMIC PLATE TESTS:

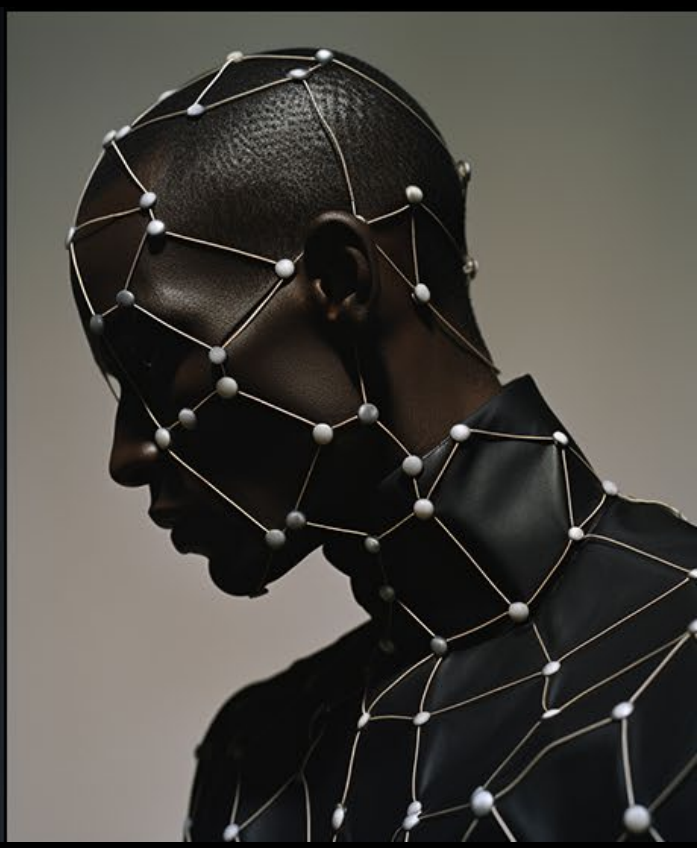
HTTPS://S.MJ.RUN/F13BWVR0TYA HTTPS://S.MJ.RUN/NADPNABEUWI HTTPS://S.MJ.RUN/MSESTZWM8LQ HTTPS://S.MJ.RUN/5KJ7FKXFWDU PENTAGONAL CERAMIC PLATE AGAINST BLACK BACKGROUND WITH QUILT-LIKE SURFACE DESIGN, RAY TRACING, HIGHLY REFLECTIVE, VINTAGE 60'S MODERN, WEATHERED, 35MM ANALOG, ANAMORPHIC, FILM GRAIN **[MIDJOURNEY 5.2]**

PENTAGONAL SHAPES & FORMS, AVANT-GARDE SERIES:

BLACK MALE VOGUE MODELS WEARING **PENTAGONAL-SHAPED** AVANT-GARDE COSTUME, SUIT MADE OF **PENTAGONS**, MAPPLETHORPE AND JOEL PETER WITKIN, EXTREME CLOSE-UP, 35MM ANAMORPHIC, PROFILE VIEW, SPLIT LIGHT, CARL ZEISS PLANAR 50MM F/0.7 --AR 2:1 **[MIDJOURNEY 5.2]**

PENTAGONAL SHAPES & FORMS, AVANT-GARDE SERIES:

BLACK MALE VOGUE MODEL WEARING **PENTAGONAL-SHAPED** AVANT-GARDE COSTUME, SUIT MADE OF **PENTAGONS**, MAPPLETHORPE AND JOEL PETER WITKIN, EXTREME CLOSE-UP, 35MM ANAMORPHIC, PROFILE VIEW, SPLIT LIGHT, CARL ZEISS PLANAR 50MM F/0.7 --AR 2:1 **[MIDJOURNEY 5.2]**



PENTAGONAL SHAPES, LIVING MOSAICS:

HTTPS://S.MJ.RUN/CUHCPHVPK-8 HTTPS://S.MJ.RUN/NZPGGXV04RS PENTAGONAL BIREFRINGENT REFLECTIVE ZORFLEX GIRIH MOSAIC TILES FORMING THE FACE OF A MOROCCAN SAINT IN A COLORFUL MIHRAB, **PENTAGRAM PENROSE TILING**, RAY TRACING, BOUNCED BLUE LIGHT, 35MM, CARL ZEISS LENS, SUBSURFACE SCATTERING --AR 3:2 **[MIDJOURNEY 5.2]**

HTTPS://S.MJ.RUN/CUHCPHVPK-8 HTTPS://S.MJ.RUN/NZPGGXV04RS PENTAGONAL BIREFRINGENT REFLECTIVE ZORFLEX GIRIH MOSAIC TILES FORMING THE FACE OF A MOROCCAN SAINT IN A COLORFUL MIHRAB, **PENTAGRAM PENROSE TILING**, RAY TRACING, BOUNCED BLUE LIGHT, 35MM, CARL ZEISS LENS, SUBSURFACE SCATTERING --AR 3:2 **[MIDJOURNEY 5.2]**

PENTAGONAL FORMS, ALEISTER CROWLEY:

DRAMATIC CLOSE-UP OF ALEISTER CROWLEY HOLDING A GLOWING **PENTAGRAM**, STYLE OF JOEL PETER WITKIN AND H.R. GIGER, GRITTY, ANALOG, ANAMORPHIC, ORANGE FILL LIGHT, 35 MM FILM GRAIN, WORM'S EYE VIEW, SMOKE, CAUSTICS, RAY TRACING, GUM BICHROMATE, FRACTURED MOTION BLUR, BLUE MONOCHROMATIC PALETTE --AR 2:1 **[MIDJOURNEY 5.2]**

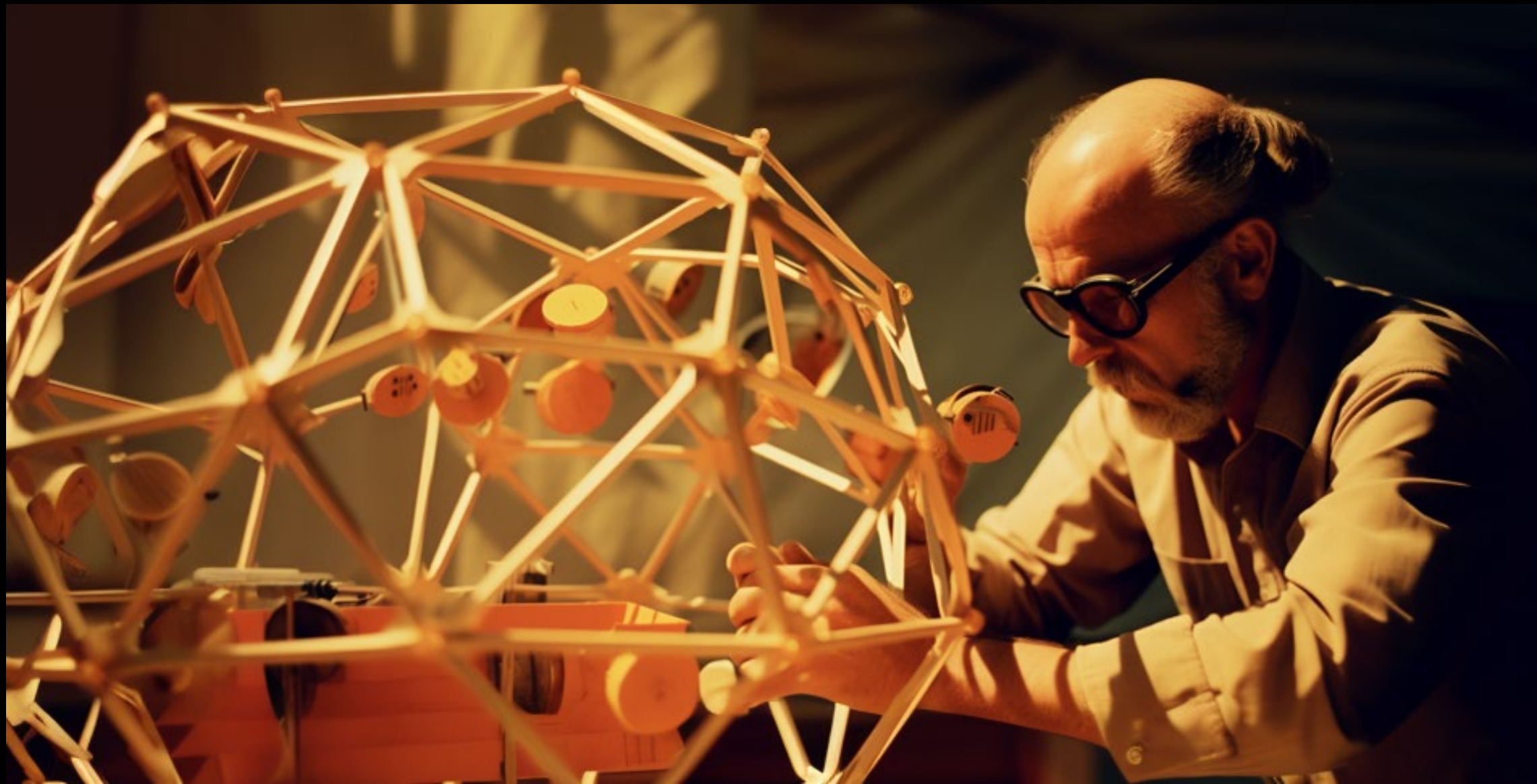
PENTAGONAL FORMS, ALEISTER CROWLEY:

CLOSE-UP DRAMATIC ANGLE OF ALEISTER CROWLEY STANDING BEFORE AN EXTRUDED 4D **PENTAGRAM**, STYLE OF JOEL PETER WITKIN, GRITTY, ANALOG, ANAMORPHIC, 35 MM FILM GRAIN, GUM BICHROMATE, WARM MONSTER LIGHTING, BLUE MONOCHROMATIC PALETTE --AR 2:1 **[MIDJOURNEY 5.2]**

DRAMATIC CLOSE-UP OF ALEISTER CROWLEY HOLDING A GLOWING **PENTAGRAM**, STYLE OF JOEL PETER WITKIN AND H.R. GIGER, GRITTY, ANALOG, ANAMORPHIC, ORANGE FILL LIGHT, 35 MM FILM GRAIN, WORM'S EYE VIEW, SMOKE, CAUSTICS, RAY TRACING, GUM BICHROMATE, FRACTURED MOTION BLUR, BLUE MONOCHROMATIC PALETTE --AR 2:1 **[MIDJOURNEY 5.2]**

PENTAGONAL FORMS, GEODESIC DOME TESTS:

BUCKMINSTER FULLER CONSTRUCTING A MINIATURE TOY **PENTAGONAL GEODESIC DOME**, LOMOGRAPHY REDSCALE XR 50-200 35MM, ANAMORPHIC, ANALOG, CARL ZEISS PLANAR 50MM F/0.7, LIFE MAGAZINE AESTHETIC --AR 2:1 **[MIDJOURNEY 5.2]**



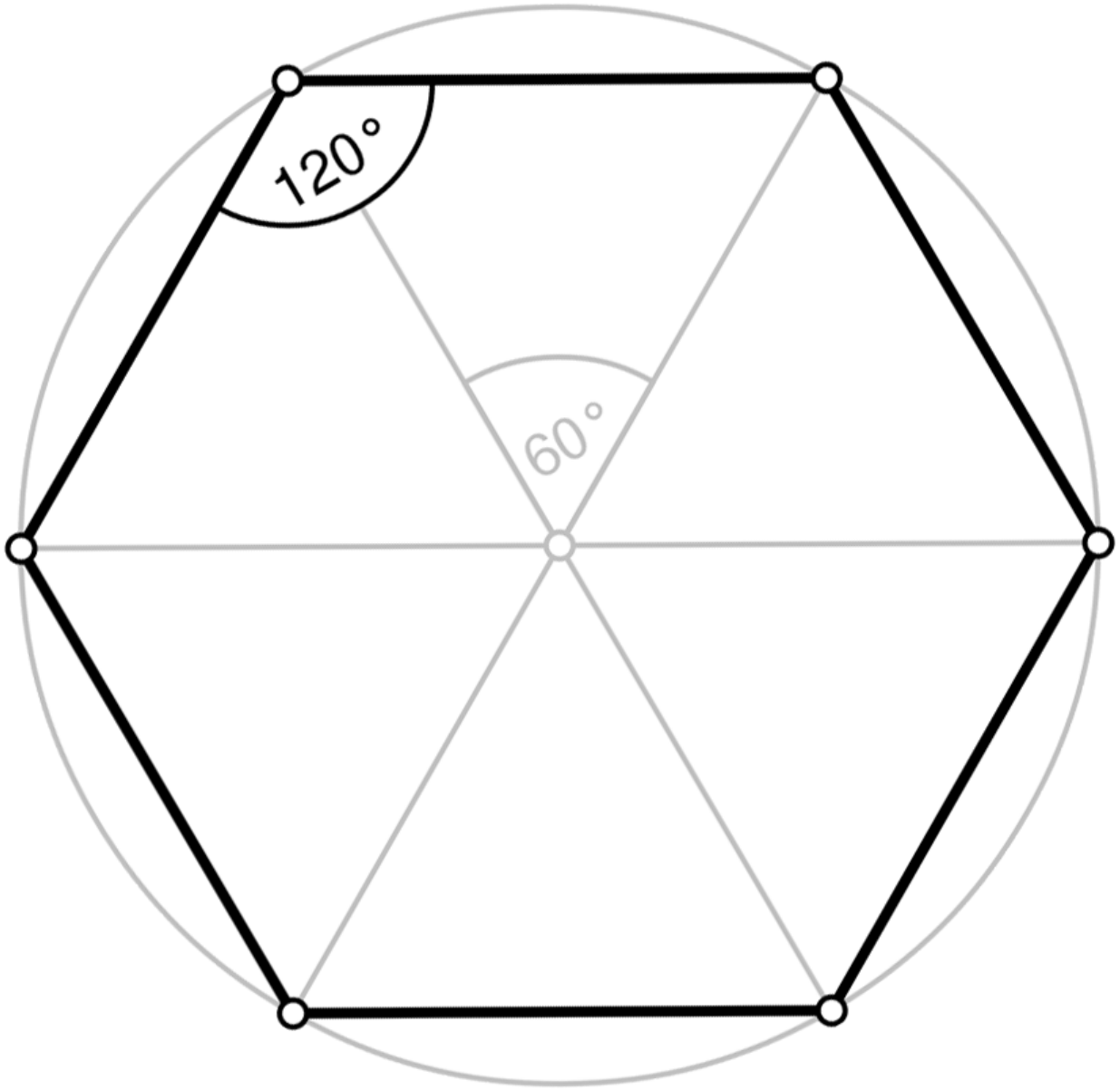
The Hexagon

The **hexagon**, a six-sided polygon with equal sides and angles, has deep roots in human culture, its origins intertwined with religion, philosophy, and mathematics. This shape's recognition can be traced back to ancient civilizations, where it held symbolic significance.

In ancient cultures like the Egyptians and Greeks, hexagons were prominent in art and architecture. The honeycomb, a naturally occurring hexagonal pattern, fascinated humans, leading to associations with bees, who were revered for their industriousness. Hexagons often symbolized harmony and balance, key concepts in early philosophical thought.

In Pythagoras' mathematical musings, the hexagon held a special place. He believed the hexagon to be a symbol of mathematical perfection, as it can be perfectly divided into equilateral triangles, an idea that resonated deeply in the development of geometric principles.

Religions also adopted hexagonal motifs. In Christianity, the hexagon was used to represent the six days of creation, while in Islamic art, it was a recurring design element, reflecting the concept of unity and balance inherent in Islamic beliefs.



The Hexagon

Hexagons have become a cornerstone of modern design across diverse fields, owing to their versatility, efficiency, and aesthetic appeal. In architecture, hexagonal shapes are employed to create both structural stability and visual intrigue. Their innate strength allows for the construction of stable and resilient buildings, while hexagonal patterns on facades or floor tiles can lend an element of elegance and complexity to architectural designs. Hexagonal spaces can be efficiently filled, reducing waste in materials and energy.

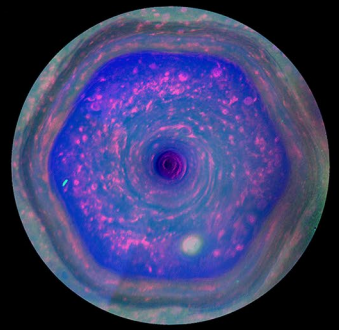
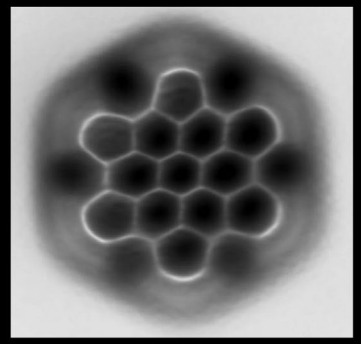
In signage and branding, the symmetrical nature of hexagons makes them ideal for crafting memorable logos and icons. Their balanced proportions are visually pleasing and easily recognizable, leaving a lasting impression on consumers.

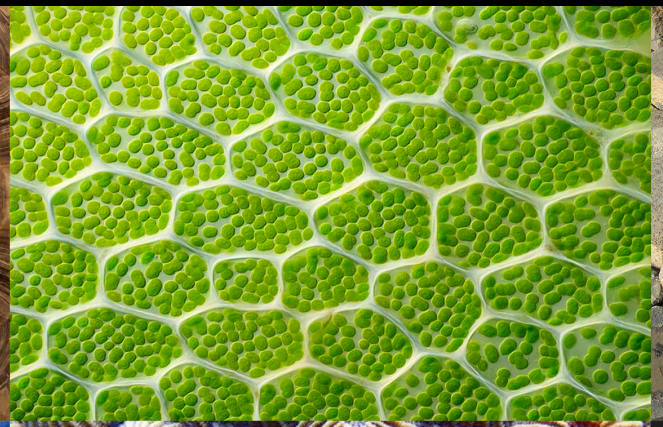
Product design frequently integrates hexagons for their ergonomic and modular qualities. Hexagonal shapes can be seamlessly arranged and interlocked, enabling designers to create versatile, space-efficient products. This modularity often extends to industrial design, where hexagonal patterns on products like consumer electronics convey both functionality and aesthetics.

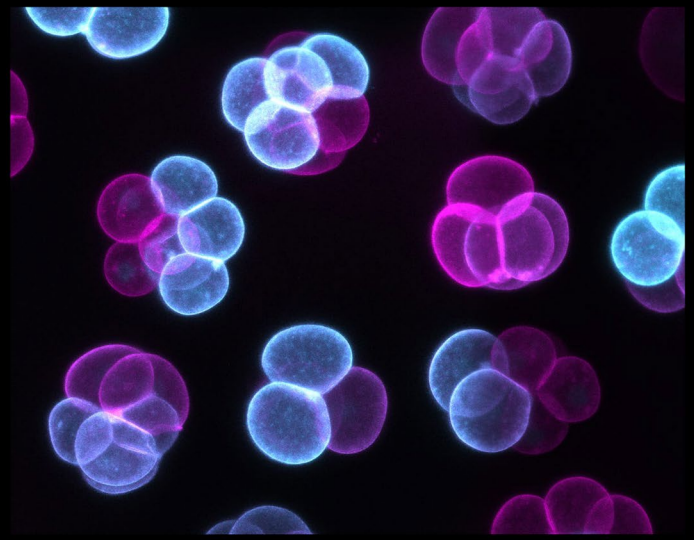
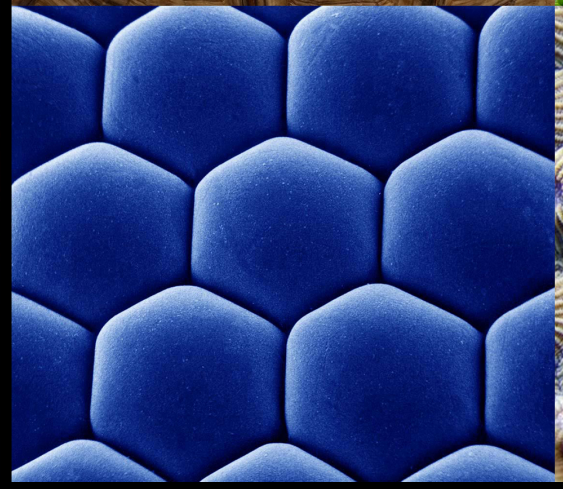
In **web design,** hexagons provide an opportunity to break away from the traditional grid structure, offering a visually engaging alternative. Hexagonal grid layouts can make websites more unique and engaging while maintaining a sense of order.

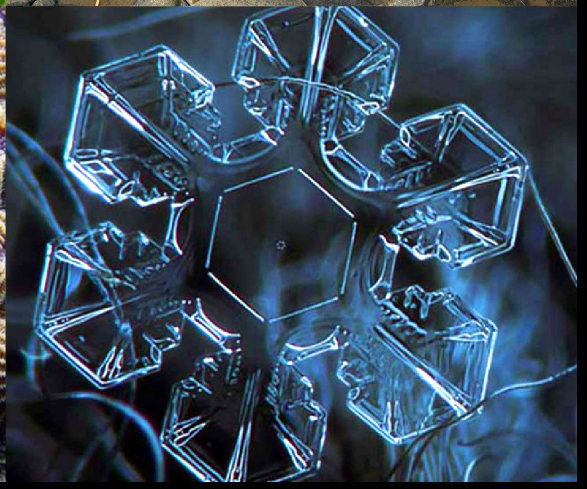
The Power of the Hexagon

Nature's preference for **hexagons** in various phenomena, such as **snowflakes and soap bubble packing,** can be attributed to the inherent efficiency of this geometric shape in optimizing space and resources. Hexagons naturally emerge due to the minimizing of surface tension and energy in these systems. In snowflakes, hexagonal patterns form due to the molecular structure of water. Water molecules align themselves in hexagonal rings as they freeze, resulting in intricate hexagonal symmetry. Soap bubbles, when packed closely together, also exhibit hexagonal arrangements due to surface tension. Hexagonal structures minimize the surface area of each bubble while maximizing the number of neighbors. Interestingly, **Saturn's mysterious hexagonal north pole** (top left image) showcases nature's fascination with hexagons on a grand scale. This massive hexagonal cloud pattern, about 20,000 miles in diameter, remains a topic of scientific inquiry. While the exact cause of this hexagon remains elusive, some theories suggest it may result from a combination of atmospheric and fluid dynamics interacting with Saturn's rotation.



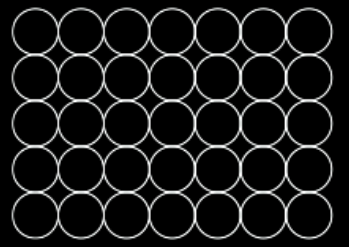


Hexagonal Tessellations

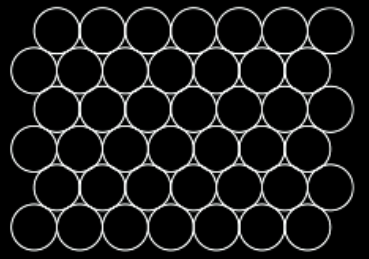
Hexagonal tessellations are a recurring geometric marvel in the natural world, reflecting both efficiency and beauty. Bees exemplify this pattern in their construction of **honeycombs**, where hexagonal cells serve as optimal storage units for honey and pollen. And as mentioned in the previous slide, **soap bubbles** form hexagonal tessellations on their surfaces as a consequence of surface tension. **Giant's Causeway** boasts hexagonal rocks formed by the cooling and cracking of volcanic basalt columns. Hexagonal tessellations extend to the **eyes of certain insects**, such as bees and dragonflies, enhancing their visual acuity and motion detection abilities. Even on a molecular level, **carbon-13's hexagonal structure** showcases the elegance of nature's chemistry. **Hexagonal cloud formations in the sky**, von Kármán vortex streets, demonstrate the atmospheric influence of hexagonal patterns. In forests, hexagonal packing in tree canopies optimizes light absorption and photosynthesis. At the microscopic level, **rosebud cells and plant cells** often take on hexagonal shapes, maximizing nutrient absorption and structural stability.

The Mysteries of Hexagonal Packing

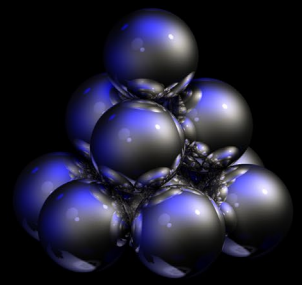
Hexagonal packing involves arranging objects, typically circles or spheres, in a hexagonal grid pattern where each object's centers are equidistant from adjacent ones. This close-packing configuration optimizes space, making it efficient for various applications. In **geodesic domes,** hexagonal packing principles guide the placement of triangular panels on a spherical framework. This maximizes structural stability and minimizes material usage, creating durable and cost-effective structures. In **virology research**, hexagonal packing concepts have been utilized to understand the structure of viruses like COVID-19. The virus's protein spikes are often arranged in a hexagonal pattern, and analyzing this geometry aids in comprehending the virus's function, replication, and potential vulnerabilities, informing vaccine and treatment development.



square packing

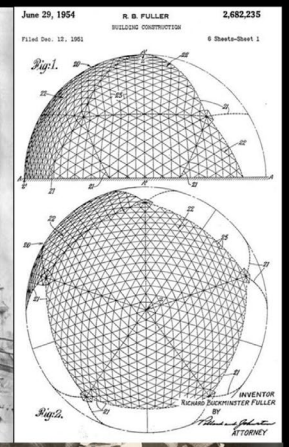


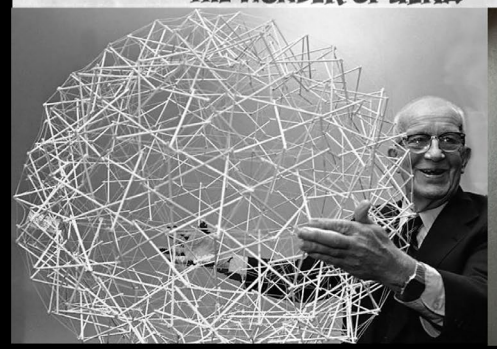
hexagonal packing

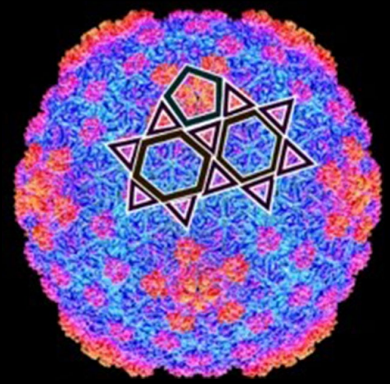


The Kepler Conjecture- Hexagonal Packing

THE WONDER OF JENA



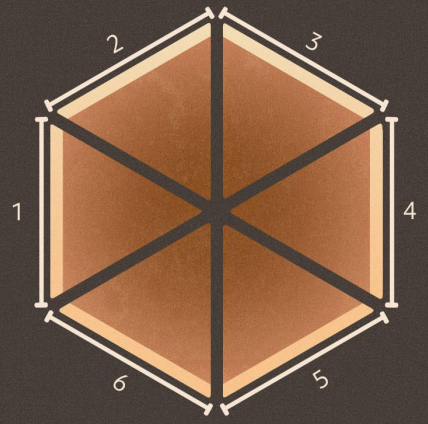




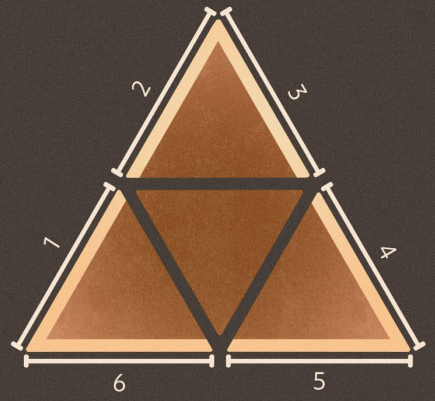
BIOLOGICAL STRATEGY

Honeycombs' Hexagon Power

Hexagons enclose more space using the same amount of wall material.

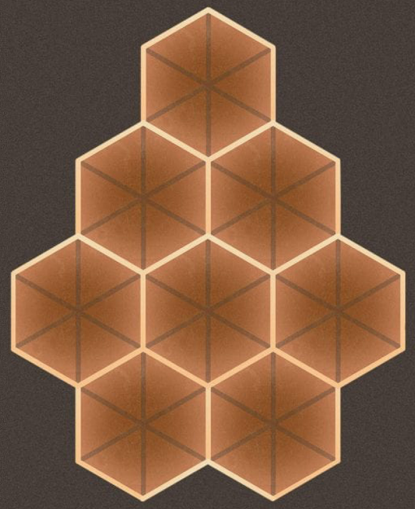


Perimeter = 6 units
Area = 6 triangles



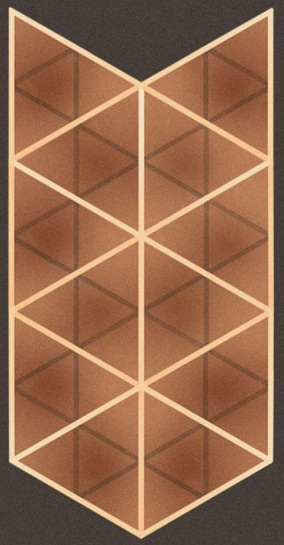
Perimeter = 6 units
Area = 4 triangles

https://asknature.org/strategy/honeycomb-structure-is-space-efficient-and-strong/

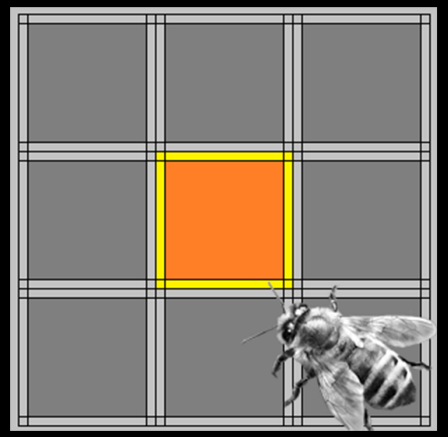


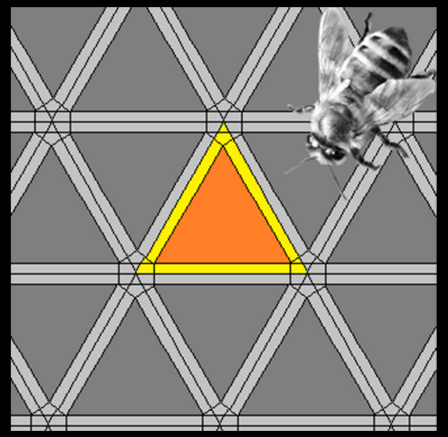
Total area = 48 triangles
Total wall material = 34 units

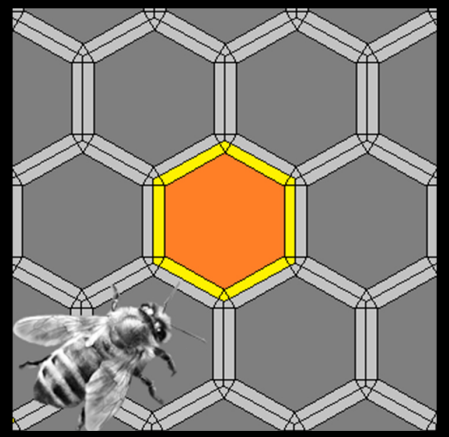
Hexagons enclose the same amount of space using less wall material.

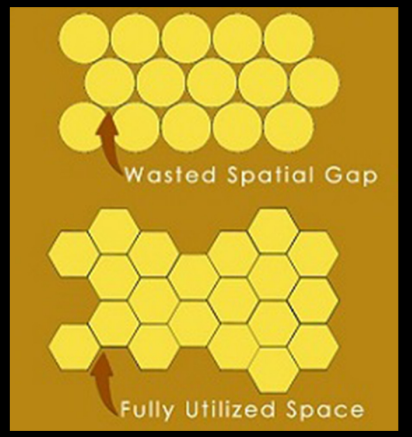


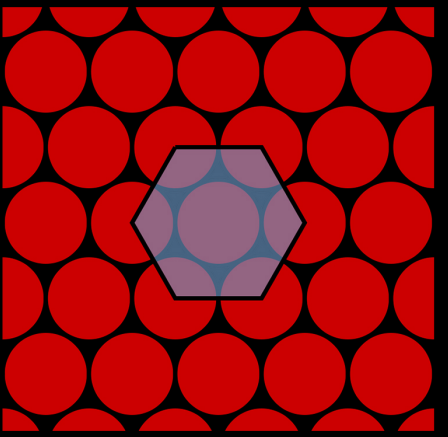
Total area = 48 triangles
Total wall material = 46 units





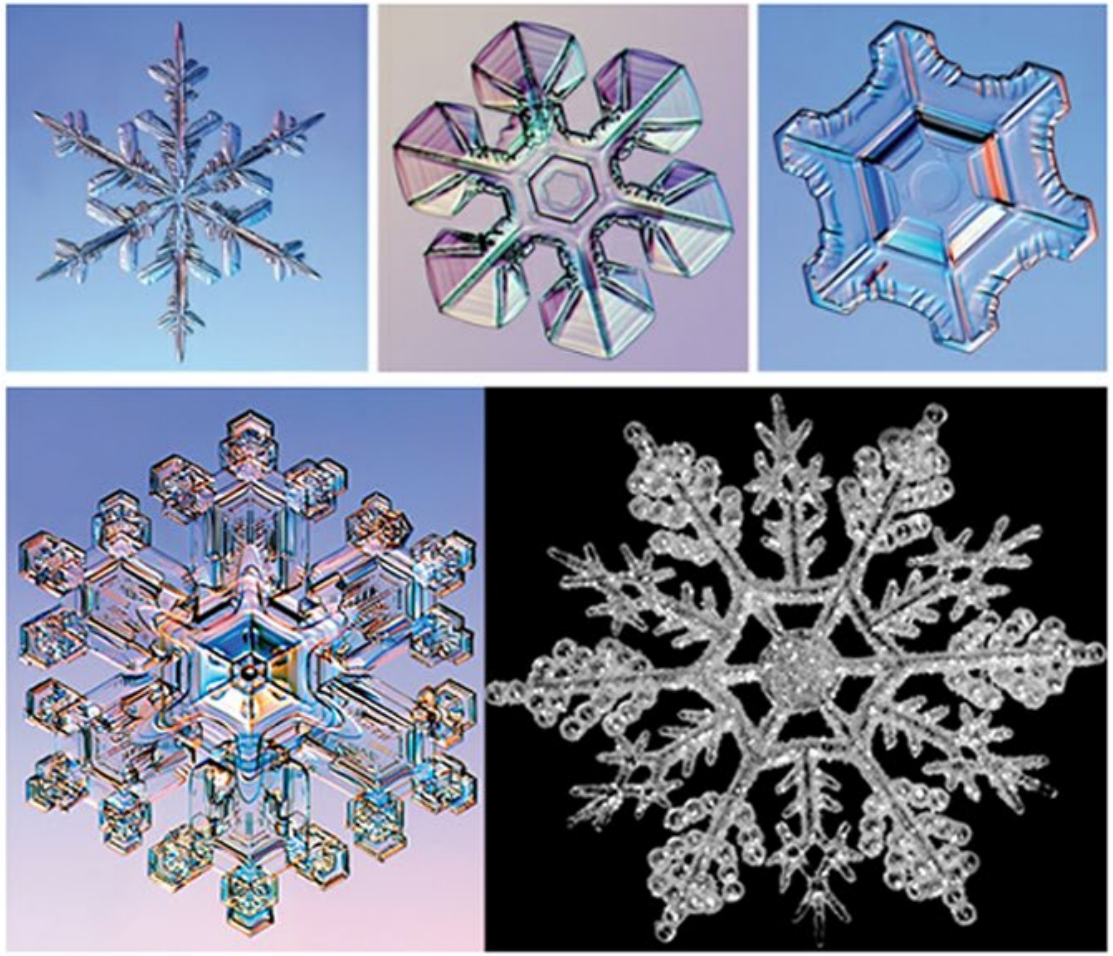






The Six-Fold Marvel of the Snowflake

Snowflakes exhibit six-fold symmetry due to the hexagonal arrangement of water molecules. Water molecules bond together through hydrogen bonds, and these bonds naturally form hexagonal patterns as they freeze. Each water molecule is connected to six others, creating a hexagonal lattice. The uniqueness of snowflakes arises from the intricate, ever-changing conditions they encounter while falling through the atmosphere. Factors such as temperature, humidity, and air currents affect their growth, resulting in a wide variety of crystal structures. This sensitivity to environmental conditions ensures that no two snowflakes experience precisely the same journey, leading to the remarkable diversity in their intricate, one-of-a-kind formations.



WILSON ‘SNOWFLAKE’ BENTLEY, HEXAGONAL SHAPES:

“UNDER THE MICROSCOPE, I FOUND THAT SNOWFLAKES WERE MIRACLES OF BEAUTY; AND IT SEEMED A SHAME THAT THIS BEAUTY SHOULD NOT BE SEEN AND APPRECIATED BY OTHERS. EVERY CRYSTAL WAS A MASTERPIECE OF DESIGN AND NO ONE DESIGN WAS EVER REPEATED. WHEN A SNOWFLAKE MELTED, THAT DESIGN WAS FOREVER LOST. ***OF ALL THE FORMS OF WATER, THE TINY SIX-POINTED CRYSTALS OF ICE CALLED SNOW ARE INCOMPARABLY THE MOST BEAUTIFUL AND VARIED****. SNOWFLAKES…I LONGED TO SEE THEIR WONDROUS FORMS FALLING FROM THE SKY. MY BREATH WOULD FREEZE ON MY BEARD; BUT I WAS OBLIVIOUS OF THE COLD, FOR I WAS IN ANOTHER WORLD, PEOPLED WITH MIRACLES. BUT ALAS! LIKE POOR HUMANITY, I TOO MUST PASS AWAY. I HAD CAUGHT BUT A FEW GRAINS OF THE SANDS OF LIFE.”* ***HTTPS://EN.WIKIPEDIA.ORG/WIKI/WILSON_BENTLEY***

Stanley Kubrick Plays Human Chess with Hexagonal Carpets in The Shining

The carpet in The Overlook Hotel's corridor plays a prominent role in Kubrick's 1980 film, "The Shining," featuring young Danny's unsettling encounter with room 237 as he explores on his tricycle. Its vivid orange, brown, and red color palette, along with its captivating graphic pattern, make it the most iconic film carpet, known as **David Hicks' Hexagon design**. This renowned carpet reflects the deliberate choices made by Kubrick, discussed by Juli Kearns in 'How the Kubrick Carpet Trick Works' on Idyllpus Press. Kearns draws parallels between Danny's positioning on the carpet and a chess move, relating it to the chess game between HAL and Frank Poole in "2001: A Space Odyssey." It also foreshadows the similarly geometric garden labyrinth, where he will eventually run for his life from his possessed and unhinged father.

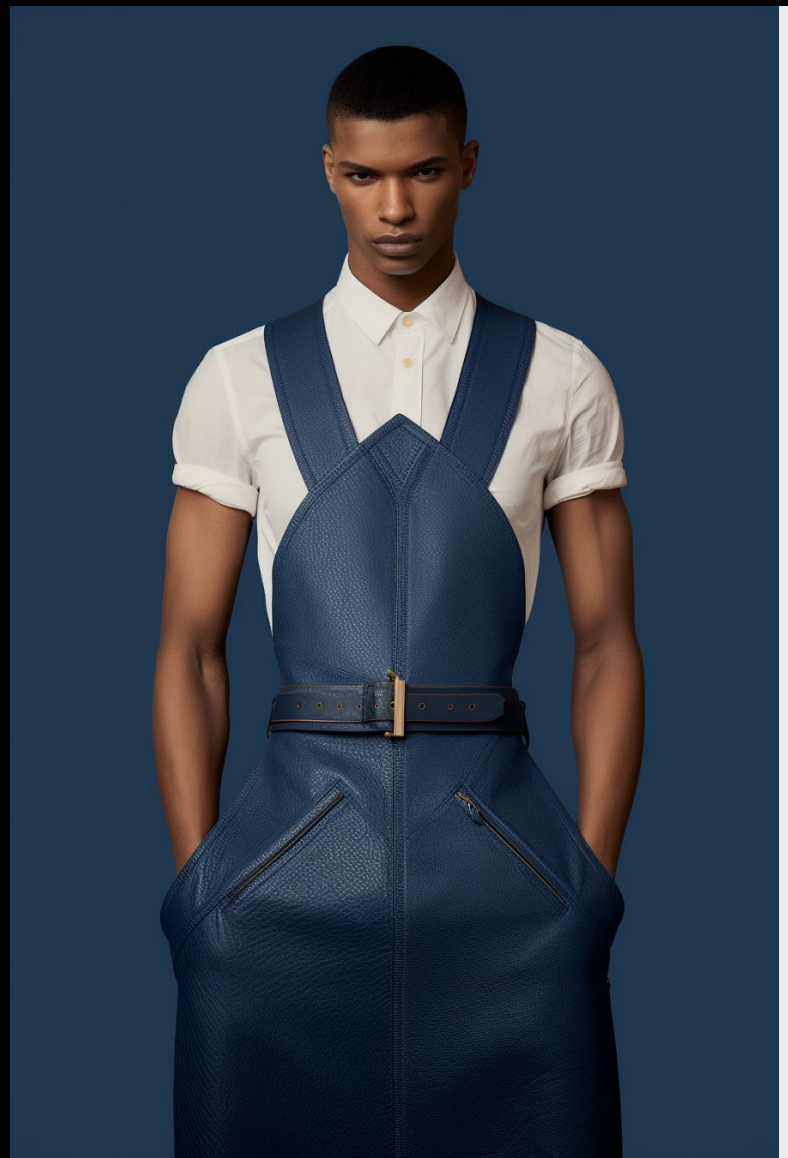
https://filmandfurniture.com/2017/11/kubricks-carpet-in-the-shining/

HEXAGONAL SHAPES, THE ICING:

HTTPS://S.MJ.RUN/8ZKLJIPQISW TOP DOWN VIEW, STYLE OF THE SHINING, DANNY PLAYING WITH TOY TRUCKS LOOKING AT A YELLOW BALL ON A CARPET WITH AN ORANGE-YELLOW-BLACK **HEXAGONAL PATTERN**, MOVIE COMPOSITION, 35MM ANAMORPHIC, ANALOG --AR 2:1 **[MIDJOURNEY 5.2]**

IRREGULAR HEXAGONAL FORMS, FASHION EXPLORATIONS:

HTTPS://S.MJ.RUN/KMAQ_8JCU00 MODEL WEARING A BLUE DENIM DRESS WITH A HIGH WAIST BELT, V-NECK STRAPS, AND **HEXAGONAL-SHAPED** SHORT SKIRT, DRAMATIC LIGHTING, VOGUE FASHION SHOOT, --AR 2:3 **[MIDJOURNEY 5.2]**



Dress design by M. Ganesh
aozata.com

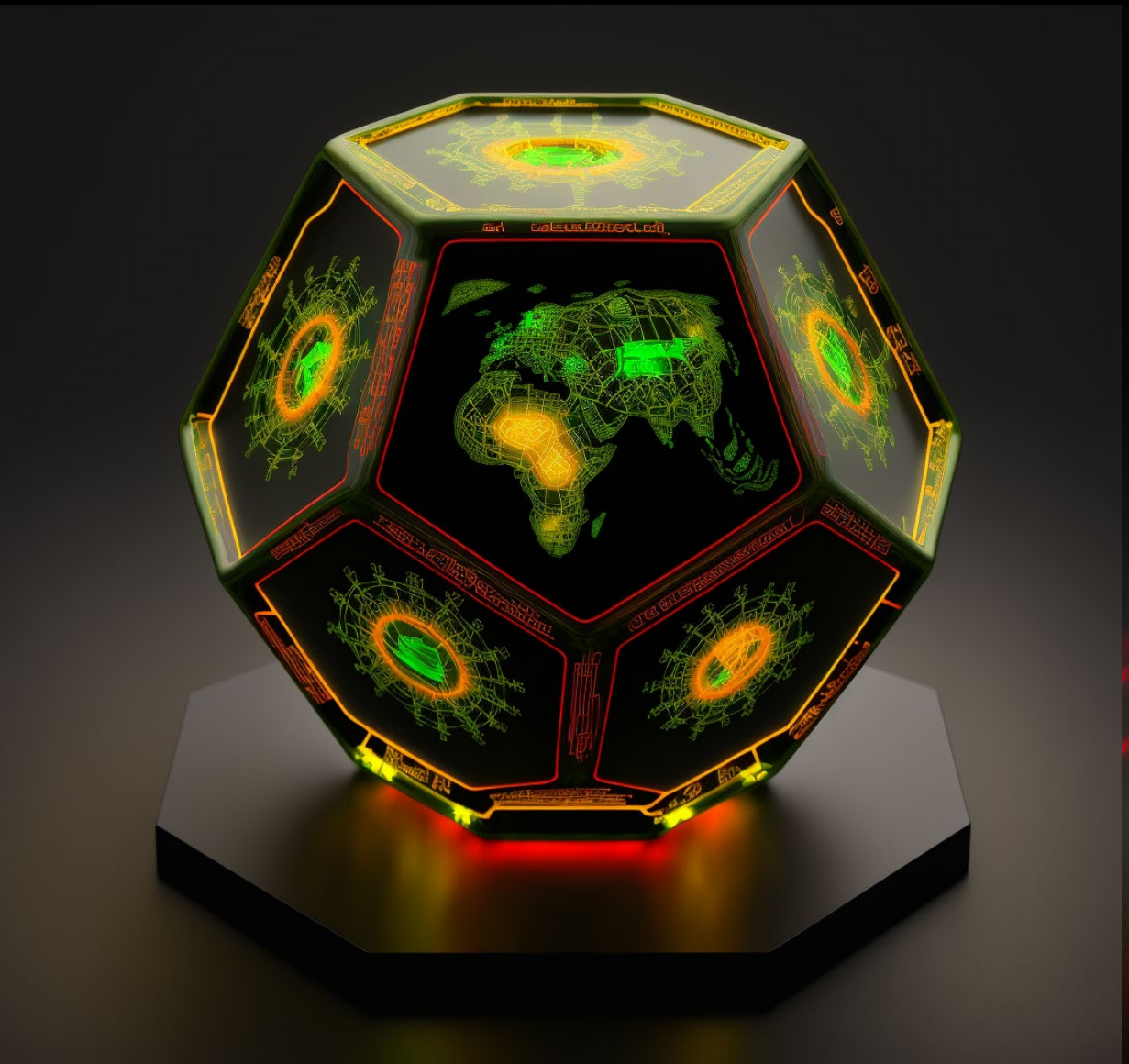
HEXAGONAL FORMS, THE LAKHIYANA:

EXTREME CLOSE-UP OF **HEXAGONAL CHIPS** ON A CROUPIER'S TABLE WITH A DECK OF CARDS, RED FILL LIGHT, SMOKE-FILLED ROOM, 35 MM FILM GRAIN, ANAMORPHOIC, ANALOG, CARL ZEISS PLANAR 50MM F/0.7, GUM BICHROMATE PRINT --AR 2:1 **[MIDJOURNEY 5.2]**

A PAIR OF **HEXAGONAL BLACK DICE** FLOATING IN AN EXOTIC GREEN COCKTAIL DRINK LIKE ICE CUBES ON A CROUPIER'S TABLE WITH A DECK OF CARDS, 85-MM-LENS, SHARP-FOCUS, RED FILL LIGHT, DIFFUSE-BACK-LIGHTING, LOW-CONTRAST, HIGH-SHARPNESS --AR 3:2 **[MIDJOURNEY 4]**

HEXAGONAL FORMS, THE LAKHIYANA:

FUTURISTIC BLACK **HEXAGONAL DEVICE** WITH YELLOW RED SANSKRIT SYMBOLS PROJECTING GREEN HOLOGRAM OF EARTH, 85-MM-LENS, SHARP-FOCUS, SYMMETRICAL, DIFFUSE-BACK-LIGHTING, LOW-CONTRAST, HIGH-SHARPNESS --AR 3:2 **[MIDJOURNEY 4]**



HEXAGONAL FORMS, GEODESIC DOME SERIES:

HEXAGONAL GEODESIC DOME TOY, REDSCALE XR 50-200 35MM, ANAMORPHIC, ANALOG, CARL ZEISS PLANAR 50MM F/0.7, LIFE MAGAZINE AESTHETIC --AR 2:1 **[MIDJOURNEY 5.2]**

HEXAGONAL FORMS, CRYSTAL TESTS:

MULTICOLORED QUASICRYSTALS, **HEXAGON-SHAPED,** BISMUTH VENEER, TRANSLUCENT, SUBSURFACE SCATTERING, BOUNCED LIGHT, GOLDEN HOUR, DAPPLED LIGHT, BEACHSIDE, 35MM FILM GRAIN, ANAMORPHIC, ANALOG --AR 2:1 **[MIDJOURNEY 5.2]**

HEXAGONAL SHAPES & FORMS, AVANT-GARDE SERIES:

VOGUE MODEL WEARING **HEXAGON-SHAPED** AVANT-GARDE COSTUME, HONEYCOMB MADE OF **LARGE HEXAGONS**, MAPPLETHORPE AND BALDESSARI, EXTREME CLOSE-UP, 35MM ANAMORPHIC, INTENSE GAZE, SPLIT LIGHT, CARL ZEISS PLANAR 50MM F/0.7 **[MIDJOURNEY 5.2]**

ACKNOWLEDGMENTS:

MANY OF MY LIVE-ACTION PHOTOS TAKEN IN THIS SERIES CAN BE VIEWED AT **JAZNO.COM**. THANK YOU, **STUDIO BINDER SERIES**, WHICH CAN BE FOUND AT HTTPS://WWW.STUDIOBINDER.COM/BLOG (THE MOST COMPREHENSIVE REPOSITORY OF FILM AND PHOTOGRAPHY TUTORIALS ON THE WEB). AND OF COURSE, A NOD TO **WIKIPEDIA**, FOR PROVIDING A FAIR AMOUNT OF CONTENT/CONTEXT (ALL IMAGES AND TEXT HAVE BEEN ATTRIBUTED ON RESPECTIVE SLIDES, UNLESS CREATIVE COMMONS). AND THANKS TO **GIL ALTER** FROM THE **MIDJOURNEY: PROMPT TRICKS FORUM** FOR HIS INSPIRATIONAL RESEARCH. LASTLY, AN ACKNOWLEDGMENT TO CHAT GPT FOR HELPING ME EDIT AND VET KEY SECTIONS OF THIS MODULE.

The Elements of Design, Part II

https://medialoot.com/blog/the-elements-and-principles-of-design/

The **elements of design**, are the building blocks used by the designers to create the designs. They are the parts, the components that can be isolated and defined in any visual design, they are the structure of the work, the objects to be arranged and used as part of any composition. In this section, we will address **color, value, texture, and space.**

Improvisació I • 14.3 x 9.5 • Barcelona, Spain • 6.9.2012 • f/3.5 • 1/2500 sec • 500 ISO • 18 mm • Nikon D300 • Jazno Francoeur

The next lecture in this series is **Camera Basics for Generative Art VI**, part II of 'The Elements of Design'.