BARDULA FOR BACCARAT : THE HARCOURT GLASS

The project which is the subject of this book was commissioned by New York's Baccarat Hotel, on 53rd Street opposite MoMA.
It was devised by Parisian interior designers Gilles & Boissier, who were tasked with the overall design of the hotel, and take its place among the hotel's specially curated collection of contemporary art; a total of 10 French artists, among them B A R D U L A, were given carte blanche to create works on the theme of the Harcourt Glass, a timeless Baccarat icon, with particular reference to the idea of an explosion. The artists' works are placed in glass display cases in front of some of the hotel's suites, representing a symbiosis of contemporary French refinement, creativity and expertise with Baccarat's heritage.
The project described below comprises five brushed aluminium installations, forming a kinetic geometric whole magnified by the permeating light.
The works were designed not only to form a logical series but also to create the impression of a single installation existing in several different states, revealing their flawlessness by day and their poetic nature at night, when colours with varying intensities and temperatures will transform the surrounding space.
The formal coherence of these works is created through successions of strata producing the primary geometric shapes, resulting in kinetic installations that reveal changing volumes as the viewer moves around them. Face on they open up to show the Harcourt Glass set like a jewel, whereas viewed in profile they display structures concealing the Glass but projecting a shadow which unveil their underlying design.
Within these volumes, the arithmetic progression of the layers follows an exponential motion based on sinusoidal or parabolic curves, magnifying the Glass by focusing light around it at the centre of a miniature expanding universe and conveying the impression that the Glass itself is stretching the structure outward and radiating. Both the geometric form of the Harcourt Glass and its crystalline nature mean that it acts as a prism reflecting light onto each of the different layers, creating a halo which is amplified as it projects an explosion of light.
The installations function as a narrative reinterpretation of the four primary elements – Fire, Air, Water and Earth – and the fifth element which links them all, the Quintessence or force of life.
Each installation symbolises one of these five elements, with the metal layers forming simple geometric figures which follow a logical progression: firstly a triangle, then a square, a hexagon, and a circle, and finally a circle inscribed in a square.
In true Baccarat style, the triumph of movement over matter and perfection down to the last detail are essential. The mathematical research carried out into the proportions of the installations and the precision of their manufacture are reminiscent of the work of the Master Glassblowers whose expertise was handed down over the centuries, or the esoteric quest of the medieval cathedral builders and their use of symbols and numbers to ensure that only insiders could accompany them on their path to spiritual illumination and intellectual freedom.
The metal strata are deliberately hand sanded in particular directions to reveal the beauty of the underlying material and emphasise the sense of explosive motion. The viewer is drawn into a geometric and spiritual dialogue with the crystal of the Harcourt Glass, resulting in a heightened state of awareness and a metaphysical perspective.
«Our eyes are made to see forms in light; light and shade reveal these forms; cubes, cones, spheres, cylinders or pyramids are the great primary forms which light reveals to advantage; the image of these is distinct and tangible within us without ambiguity. It is for this reason that they are beautiful forms, the most beautiful forms. Everyone is agreed to that, the child, the savage and the metaphysician.» *Towards an architecture*, Le Corbusier, ed. G. Crès, 1924.
The theory of the five elements is an allegory used to describe and analyse the world, and the universality of its symbolism is apparent from its occurrence in many civilisations such as Asian Buddhism, Taoism and Hinduism, Ancient Egypt and Europe, where it was used by the Ancient Greek mathematicians as the foundation for modern science.
The theory originates from the pre-Socratic hypothesis that the universe is made up of only four elements. Given that heat rises and water always lies above earth, Aristotle proposed that the sequence should be Fire, Air, Water and Earth, with the later addition of a fifth element, the *quintessence* or *ether*.

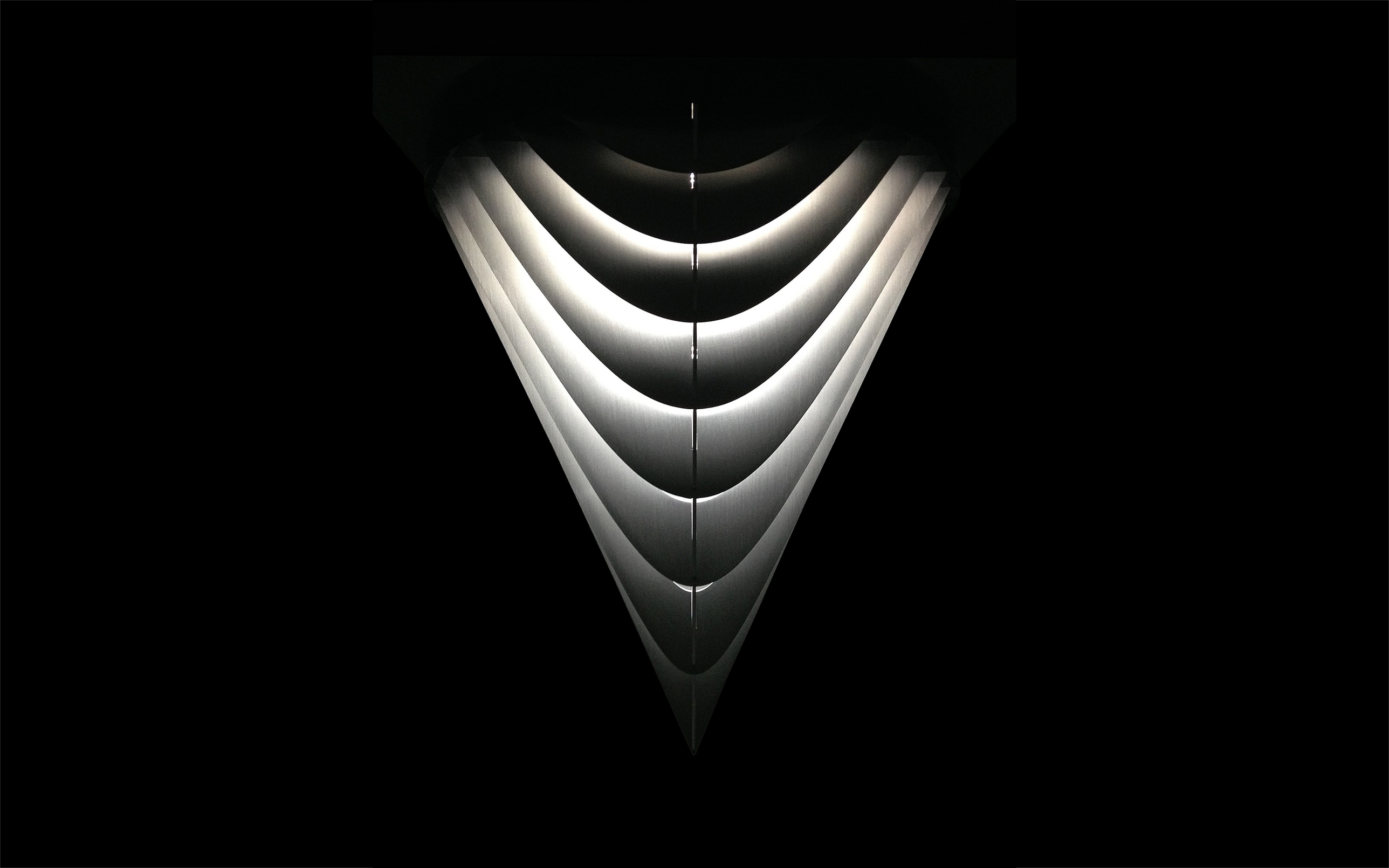
Aristotle's theory of the elements, which was rediscovered by the scholars of the Middle Ages and used as the basis for the lore of alchemy, underlies an extremely complex system of knowledge whose origins are lost in the mists of time but which is present in many cultures.
The mastery of fire allowed the manufacture of artificial gems from glass, ever since the 14th century BC in Babylonia and the 7th century BC in Assyria. The procedures followed in 3rd-century Alexandria were near-identical: the imitation of precious metals, the staining of stones and the production of purple dye. The Mesopotamians used a secret language to write down their recipes for coloured *pâte de verre*.
The alchemists were a special breed of philosopher who thought of themselves as the custodians of a science *par excellence,* not only incorporating the principles which formed the basis for all other sciences and explaining the nature, origin and rationale of everything which exists, but also recounting the origin and destiny of the entire universe.
The unity of matter was one of the philosophical precepts espoused by the alchemists, and so they saw the four elements more as states of a single matter, not unlike the theory currently advanced by modern physics, rather than different components.
The alchemists' most famous quest involved their efforts to create a philosopher's stone. Alchemy is based on the idea that the philosopher's stone (*Magnum Opus*), said to be capable of transmuting base metals into gold or silver, can be formed from the *Materia Prima*.
Other goals pursued by alchemy include the search for the elixir of life and the *panacea* (universal medicine).
Alchemy can be seen as an experimental and concrete religion which aims to shed light on consciousness and the deliverance of the spirit. This makes it as much part of the history of religion as the history of science.
Alchemical texts are characterised by the fact that the esoteric knowledge they contain is encrypted and only intended to be passed on under certain circumstances. The secret codes used by the ancient alchemists were intended to prevent laymen from acquiring this knowledge, and involved the use of deliberately obscure and allegorical poetic language, rhetorical figures and symbols to ensure that access was restricted to those with the intellectual capacity to solve these riddles.
This period also saw the emergence of the legendary corporations of cathedral builders, some of whom declared themselves heirs to the tradition of Euclid and Pythagoras. The journeyman and freemason systems can be traced back to these corporations, and still enjoy the symbolic patronage and share the values of those who have promoted the art of building throughout history.
These historical references illustrate the universal links which have always existed between expertise and knowledge on the one hand and power and privilege on the other, and the way in which the latter have been preserved by protecting the former and transmitting them on an exclusive basis through rites and codes.
Although the physical theories postulated by Empedocles, Aristotle and the alchemists have been proven wrong, the four elements can be equated to the four most common states of matter: solid (earth), liquid (water), gas (air) and plasma (fire, although fire is not a plasma).
Plasma, the most common state of matter in the universe, corresponds to the ancient element of fire. The three other states were born of this extraordinary state of electrically charged, luminous and intangible gaseous matter, since everything which makes up our world was formed in the first stars. Life itself derives from the rebound phenomena which ensued, and we are but star dust.
The recently discovered dark energy can be regarded as the quintessence or the fifth type of energy in the universe.
Fire, Air, Water and Earth will continue to feature as reference points in our collective representations, whether deliberately or unconsciously, for many years to come. The academic sciences may have shunned them, but they have remained and will long remain alive in our spirits.

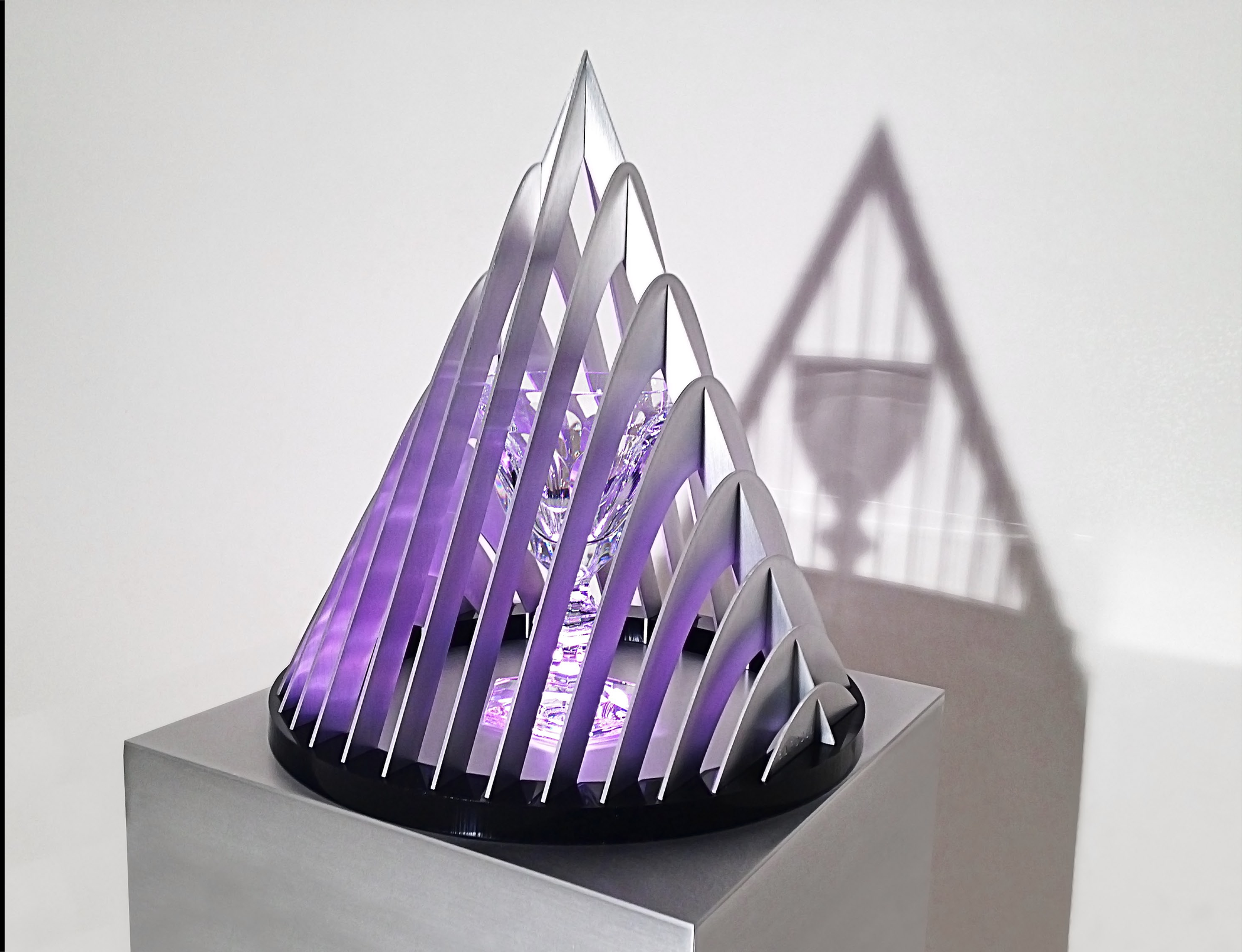
B A R D U L A
Paris, October 2014.

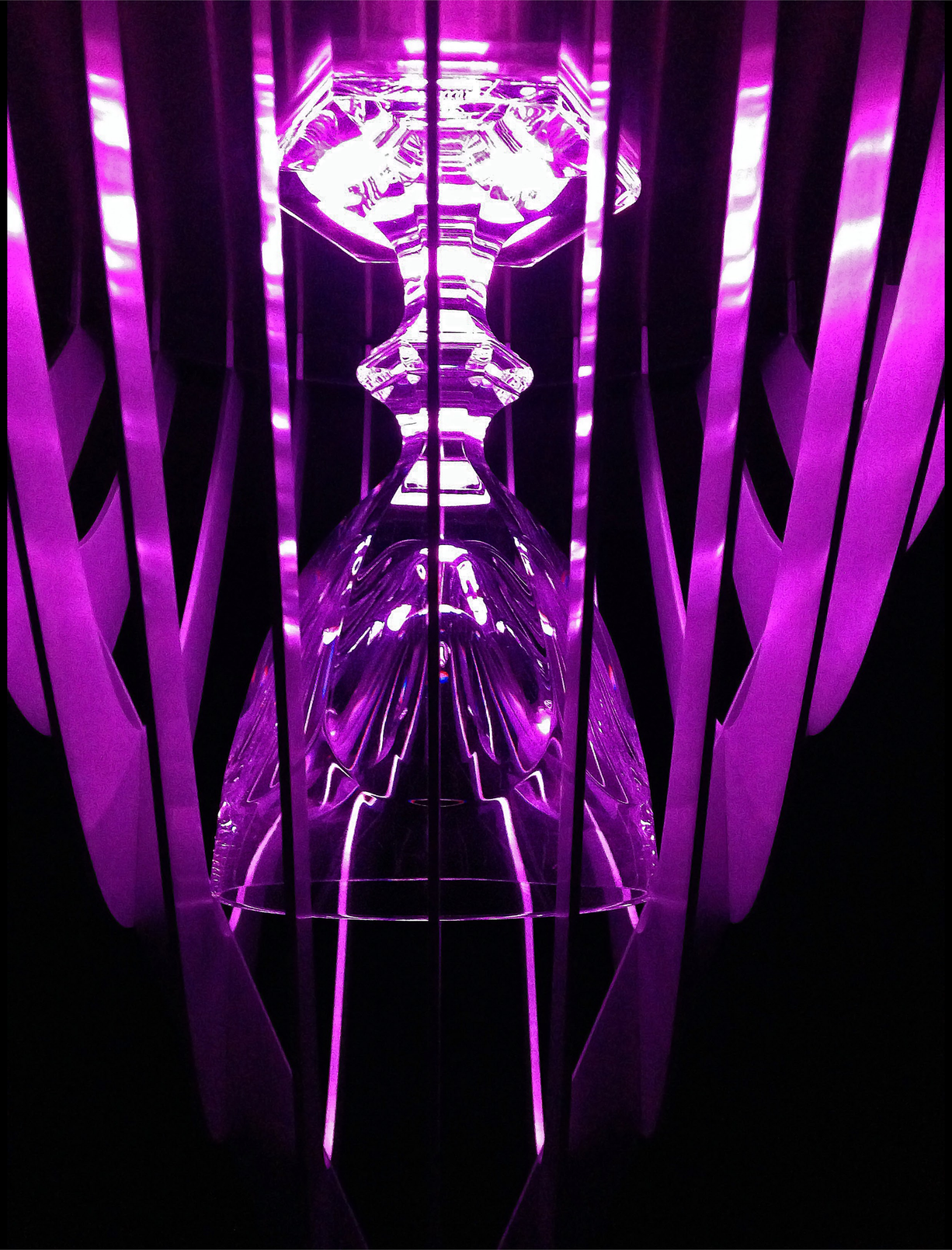
The Baccarat works were designed and manufactured in our south Paris workshop over the months between September 2013 and July 2014.

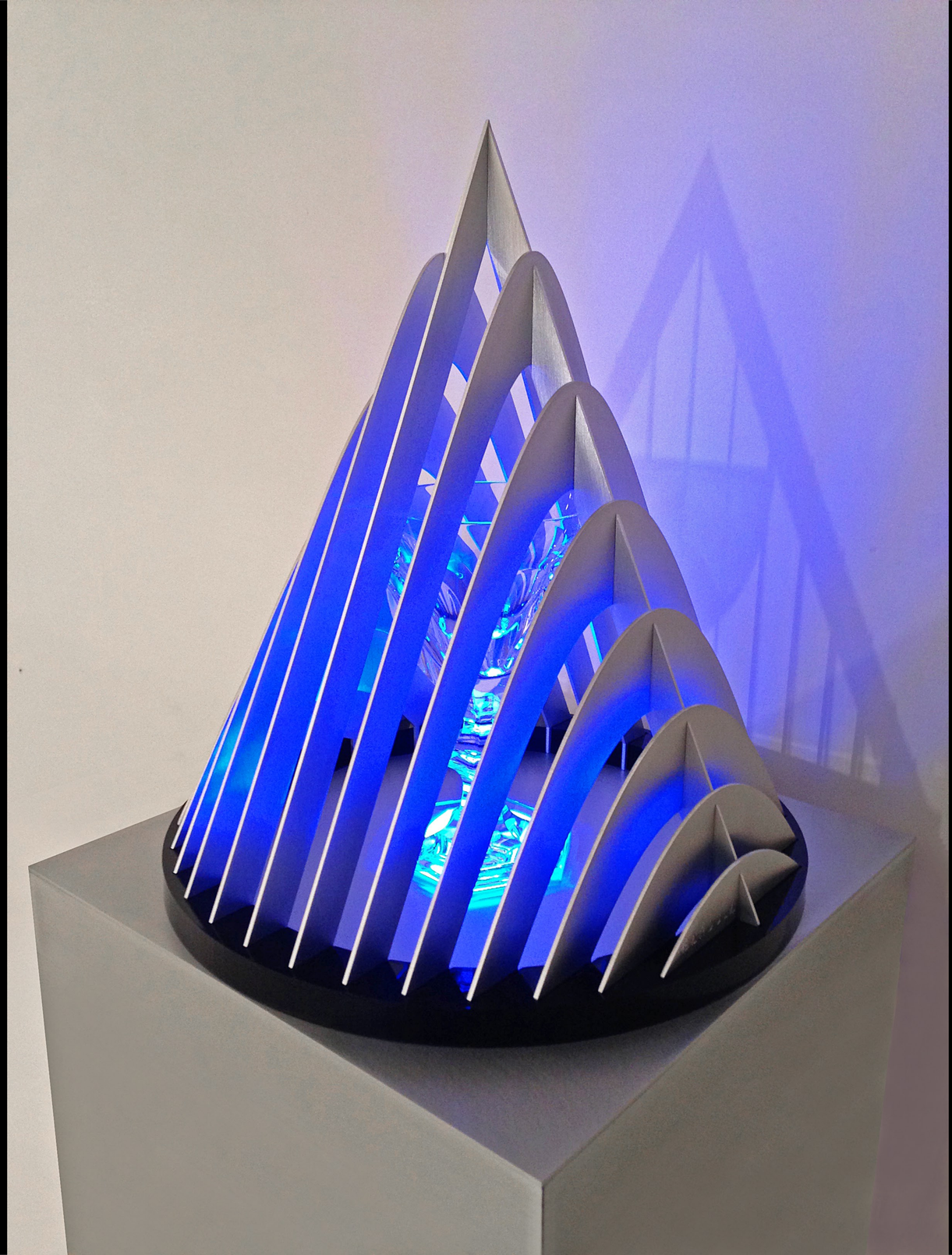
I FIRE : The Cone

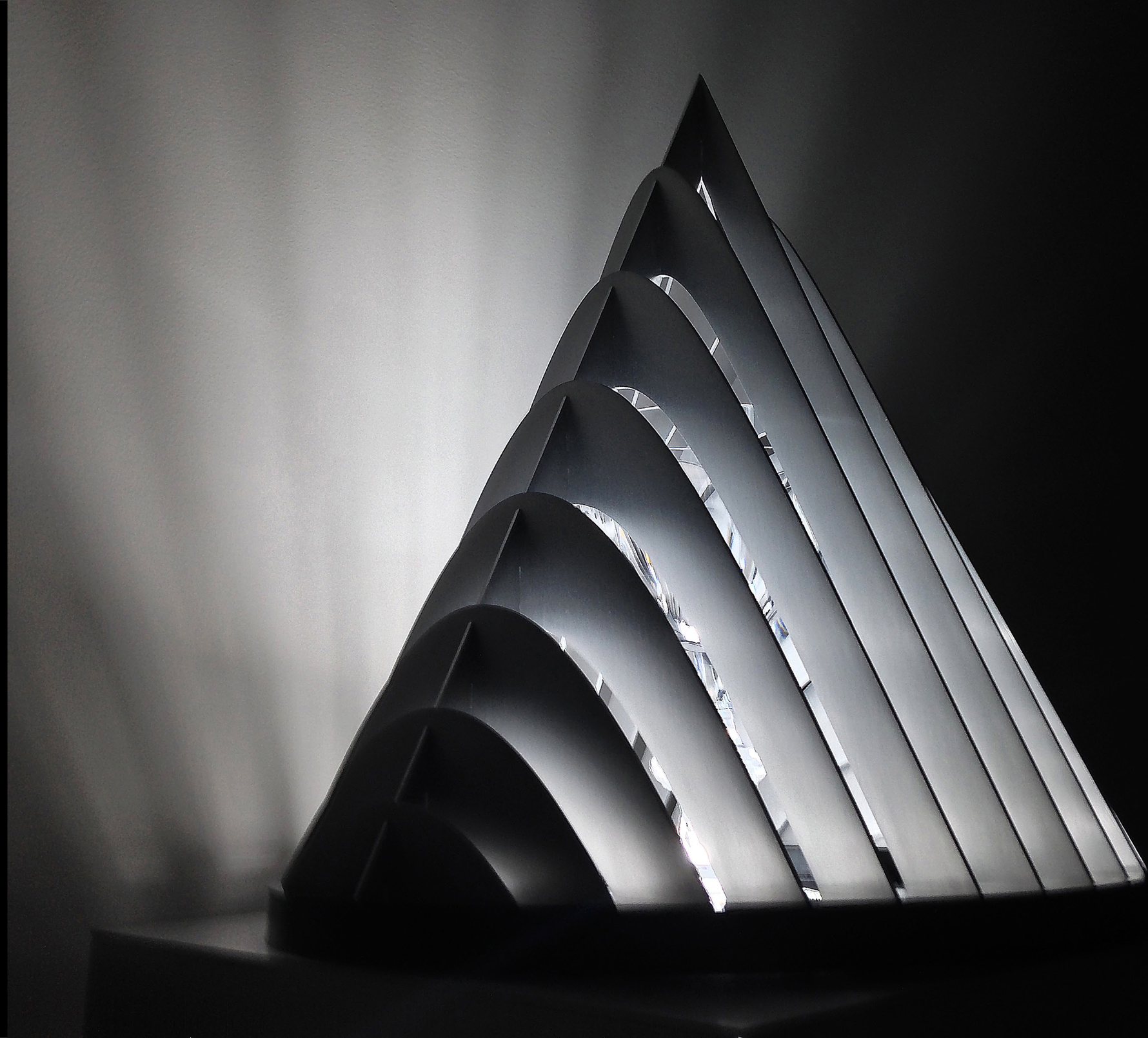
Energy and the explosion which created the universe.
The first element, Fire, is symbolised by a triangle in the alchemical tradition, representing not only the original manifestation of matter at the beginning of the universe but also the simplest primary geometric shape, with only three sides.
The triangle is a symbol of stability; piles of sands spontaneously assume a shape with a triangular profile, in common with the Egyptian pyramids and cathedral spires.
It can thus be seen not only as the basis for the monumental architecture of the Third and Fourth Egyptian dynasties, but also as the source of the links which exist between geometry – in particular its triangular branch – and metaphysical beliefs.
A triangle is stable in the horizontal as well as the vertical direction, because three of its points are always on the same plane.
The triangle is unique because any shape with polygonal outlines can be divided into triangles by means of the process known as “triangulation”. If we are familiar with the properties of triangles then we can deduce the properties of any shape, even a curve, by approximating it to a polygonal line.
This first installation incorporates the triangular symbolism of the fire accompanying the very first explosion, and the centrifugal energy of the creation light.
It also represents the mastery of fire, which can be used to transform silica from the earth into crystal when fused with a metallic element.
In common with all of the following works, the viewer’s discovery of the installation is dictated by his or her first journey around it; it remains symbolically closed from a certain angle, but as the viewer approaches a full-on view it gradually opens up to reveal the object contained in the symbol – the Harcourt Glass.

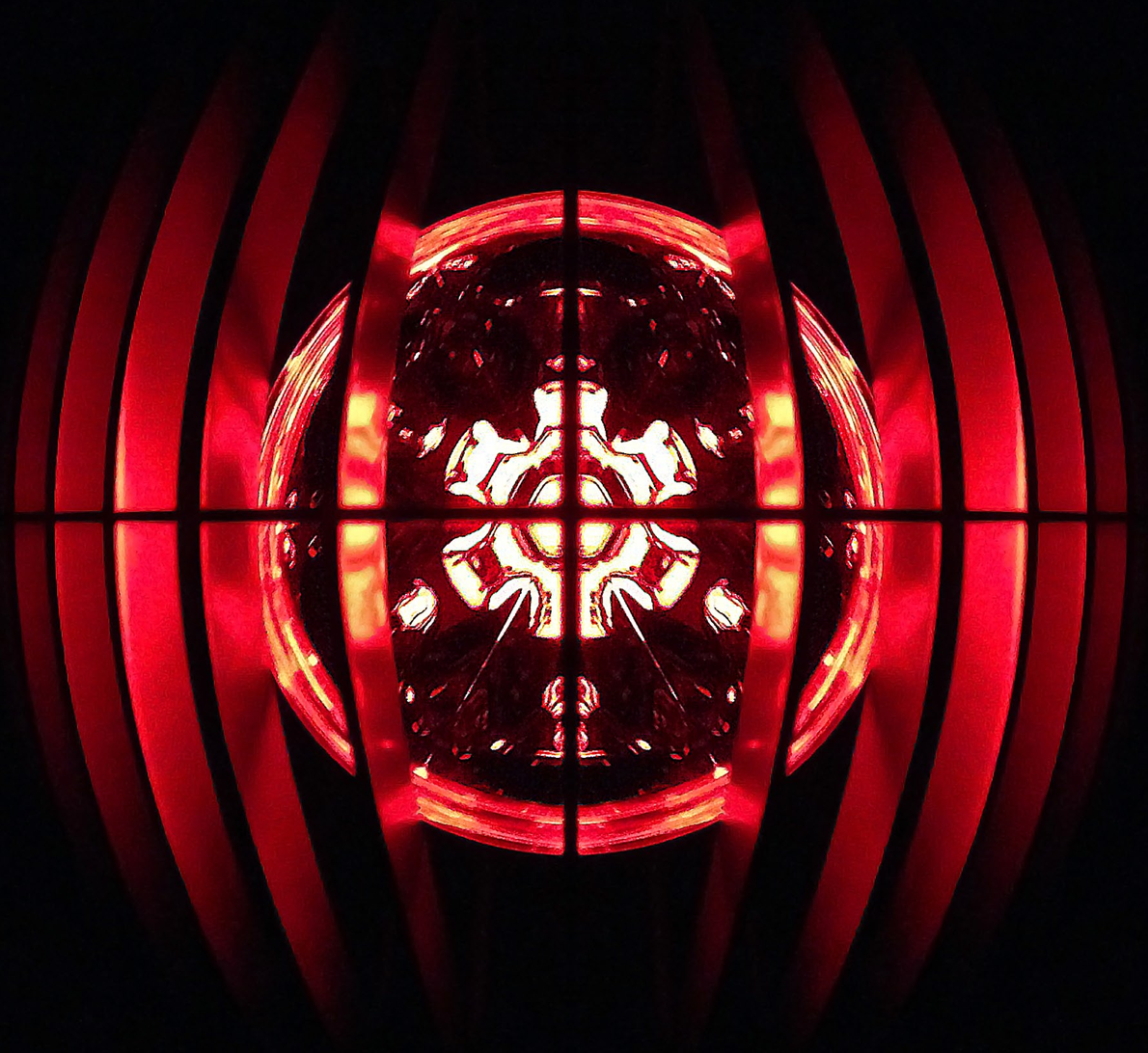


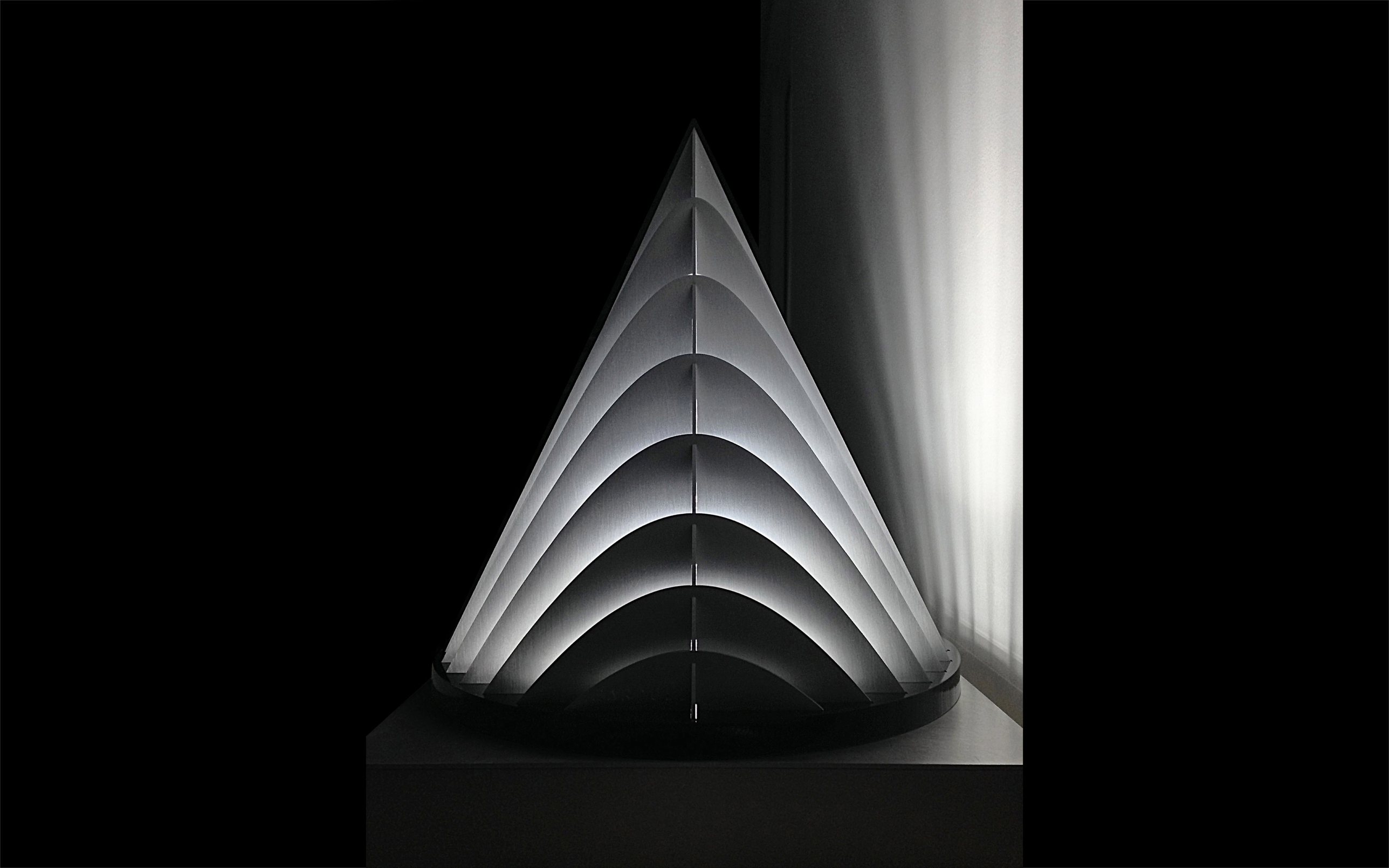


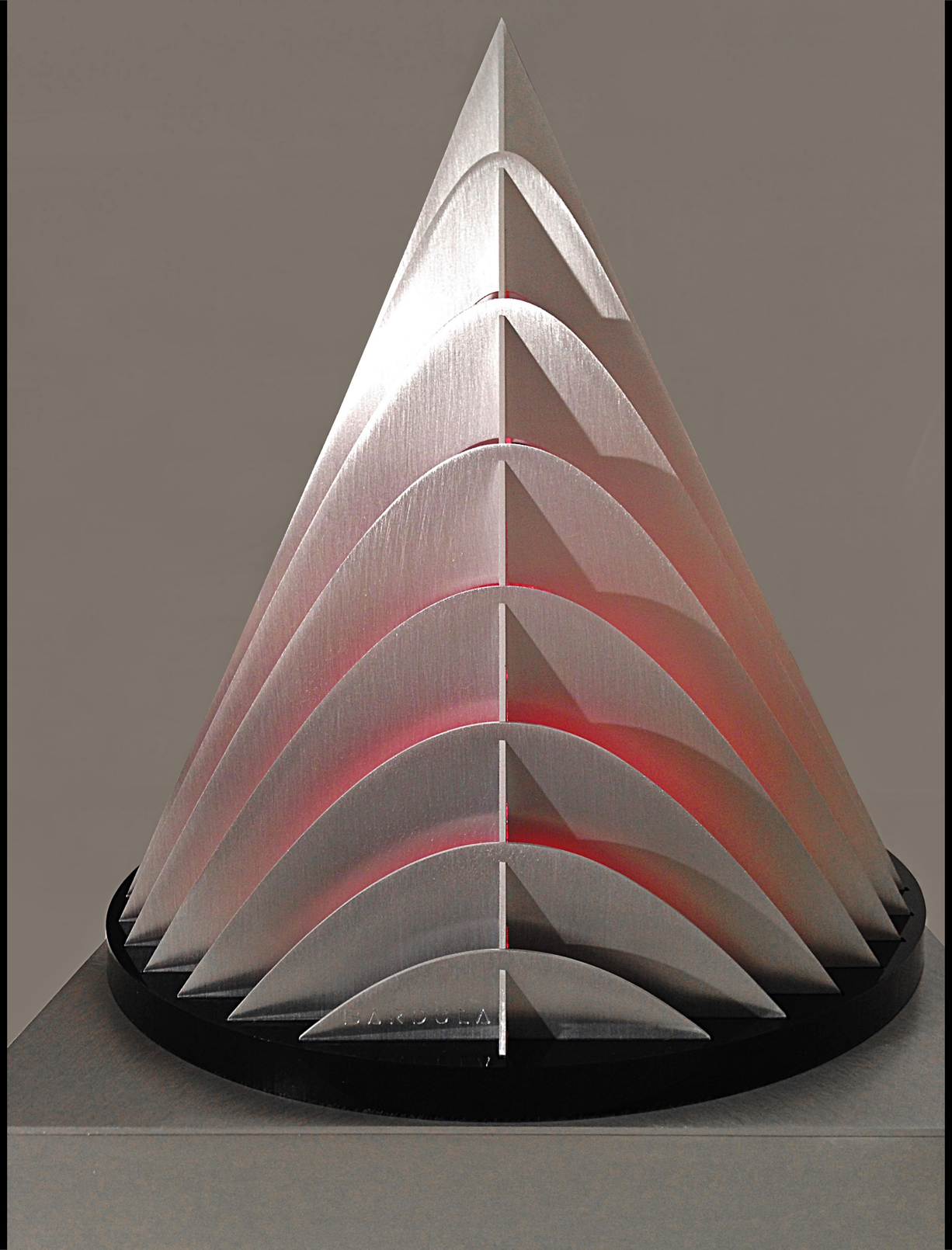


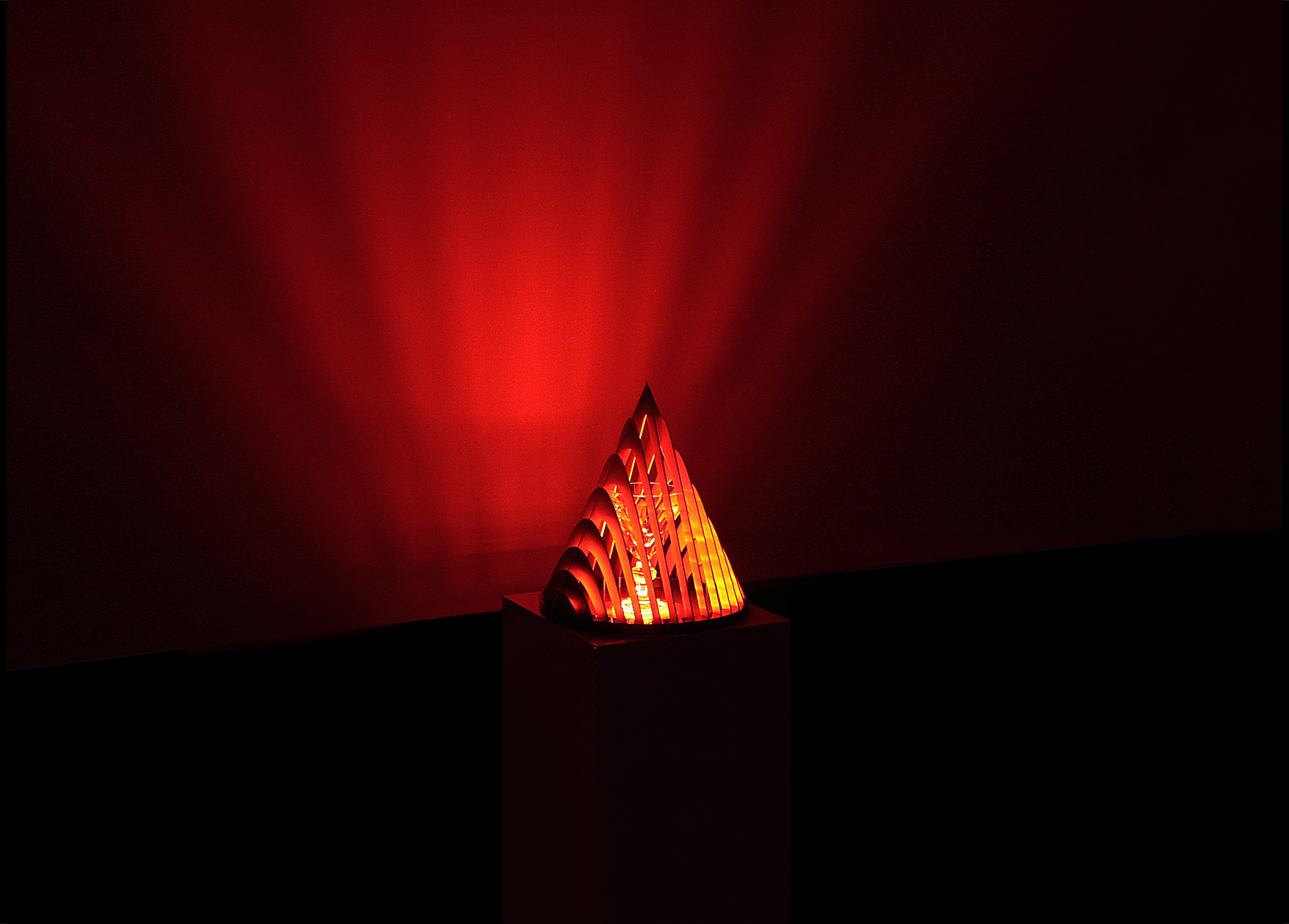


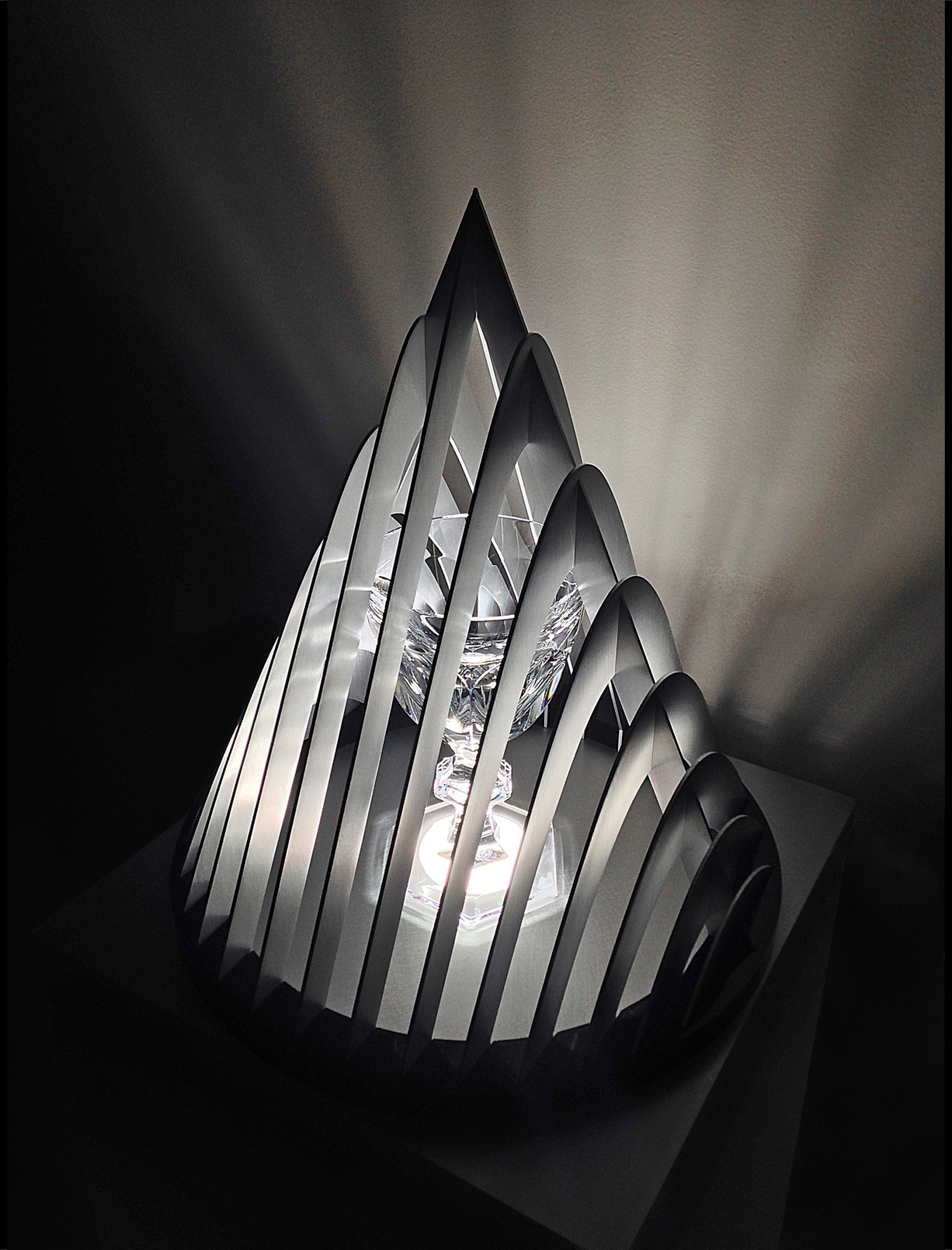


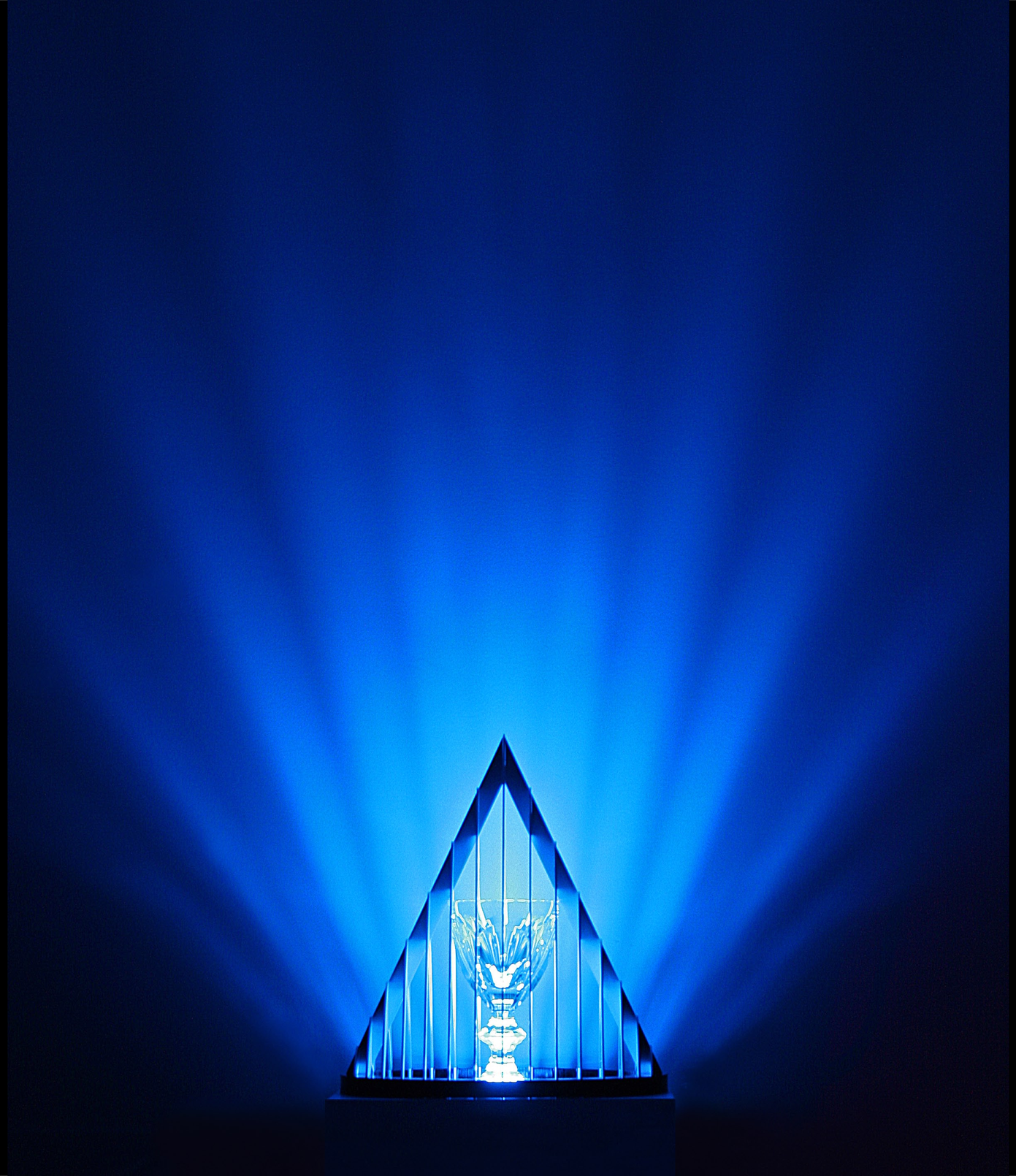






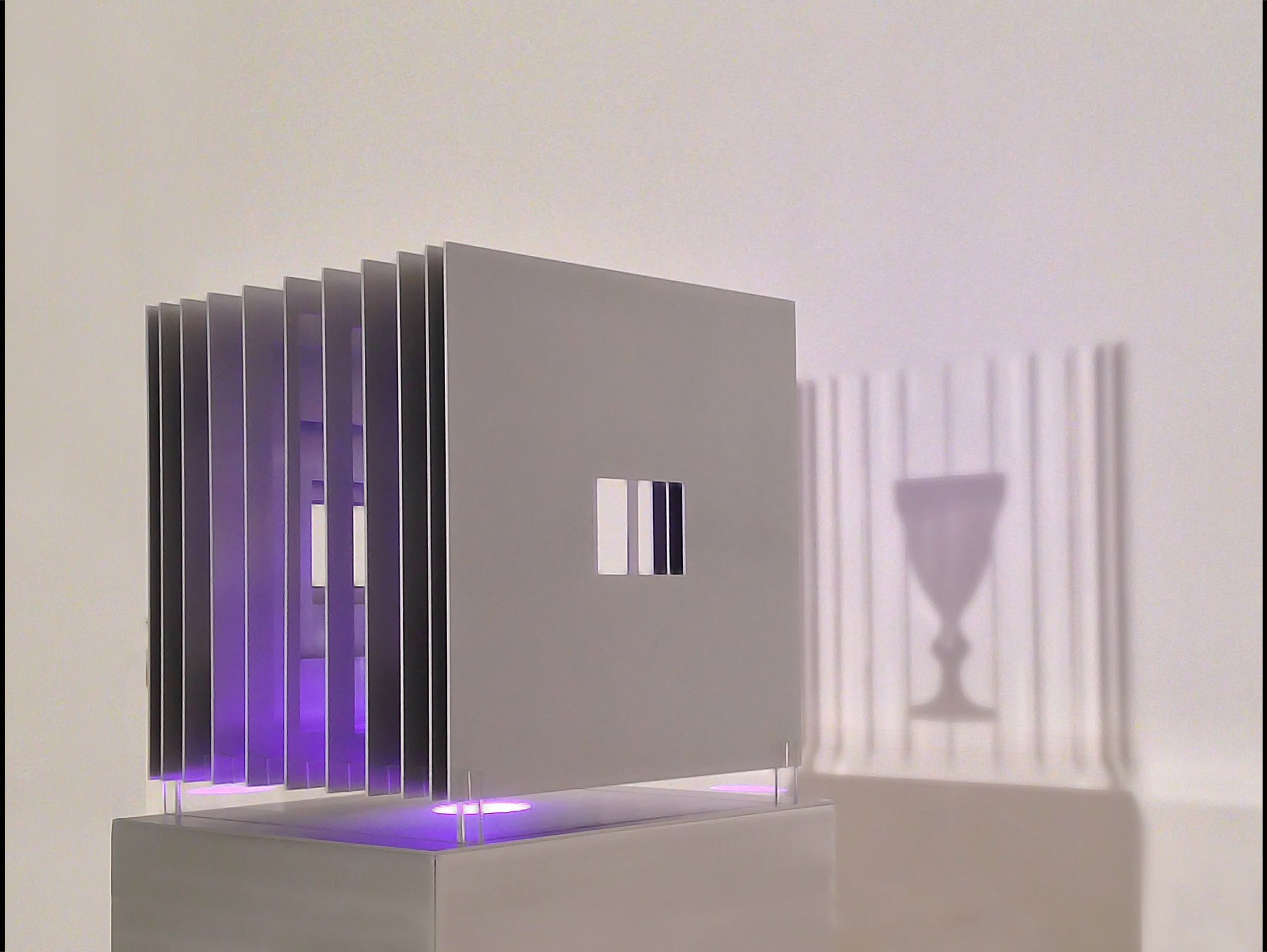


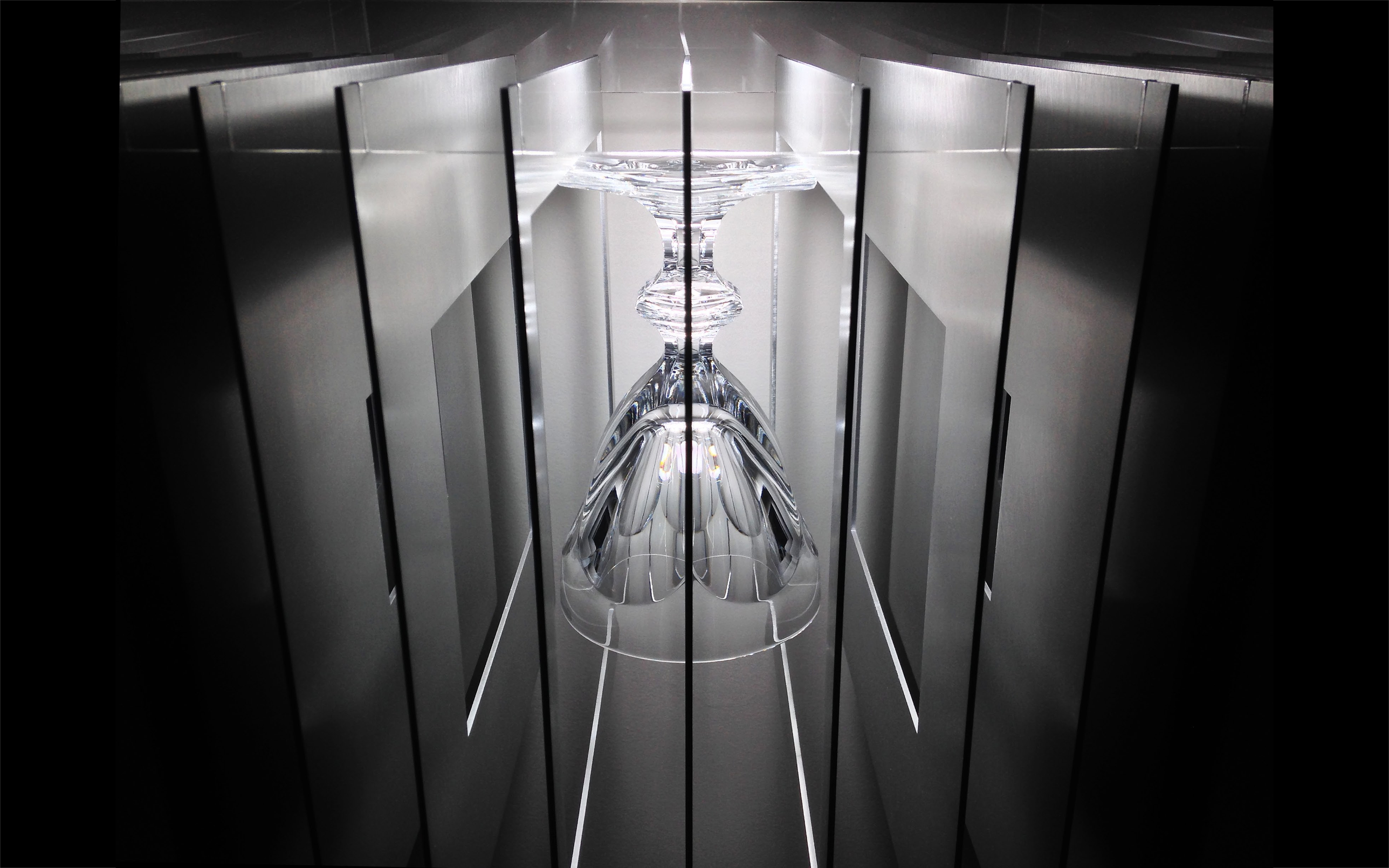


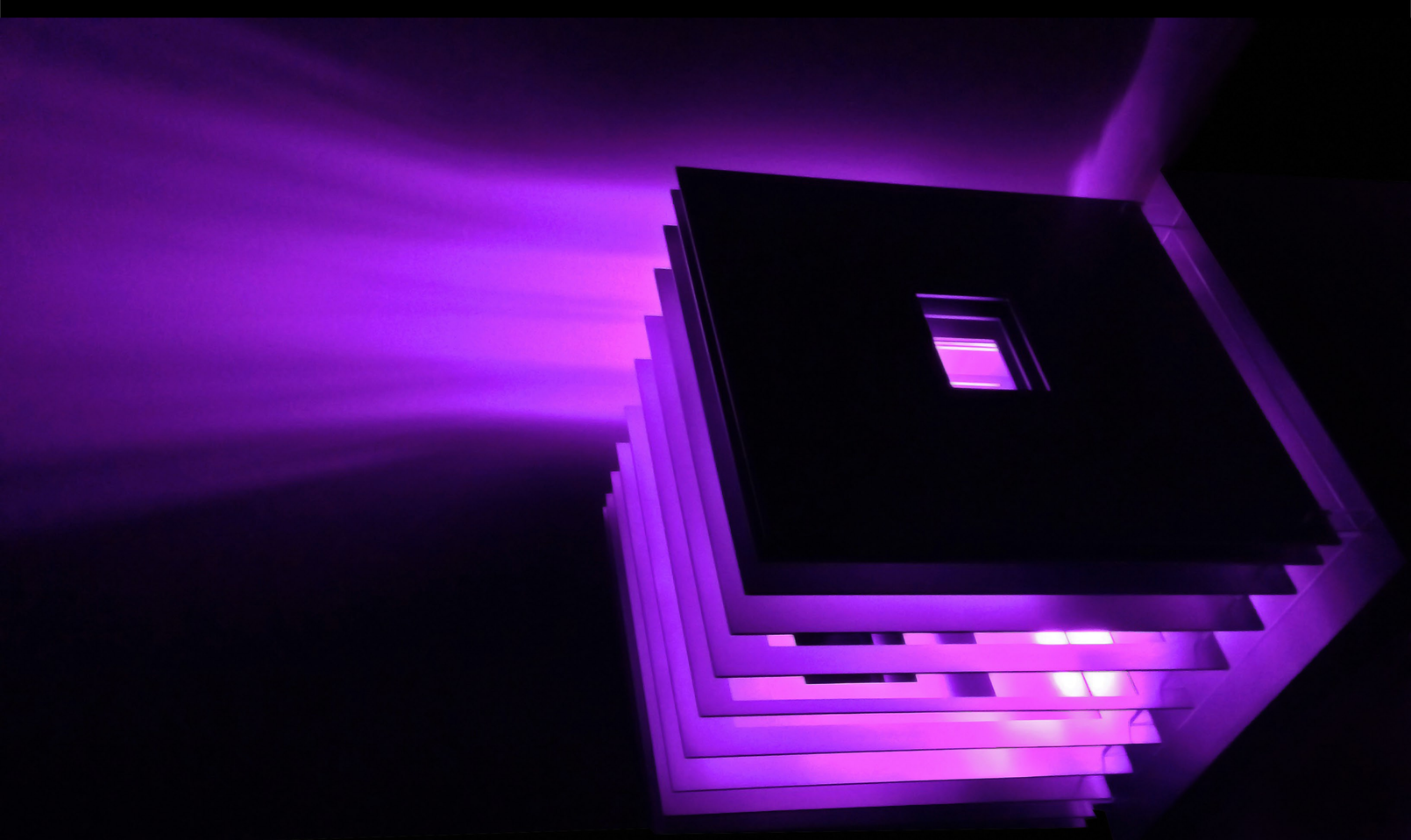


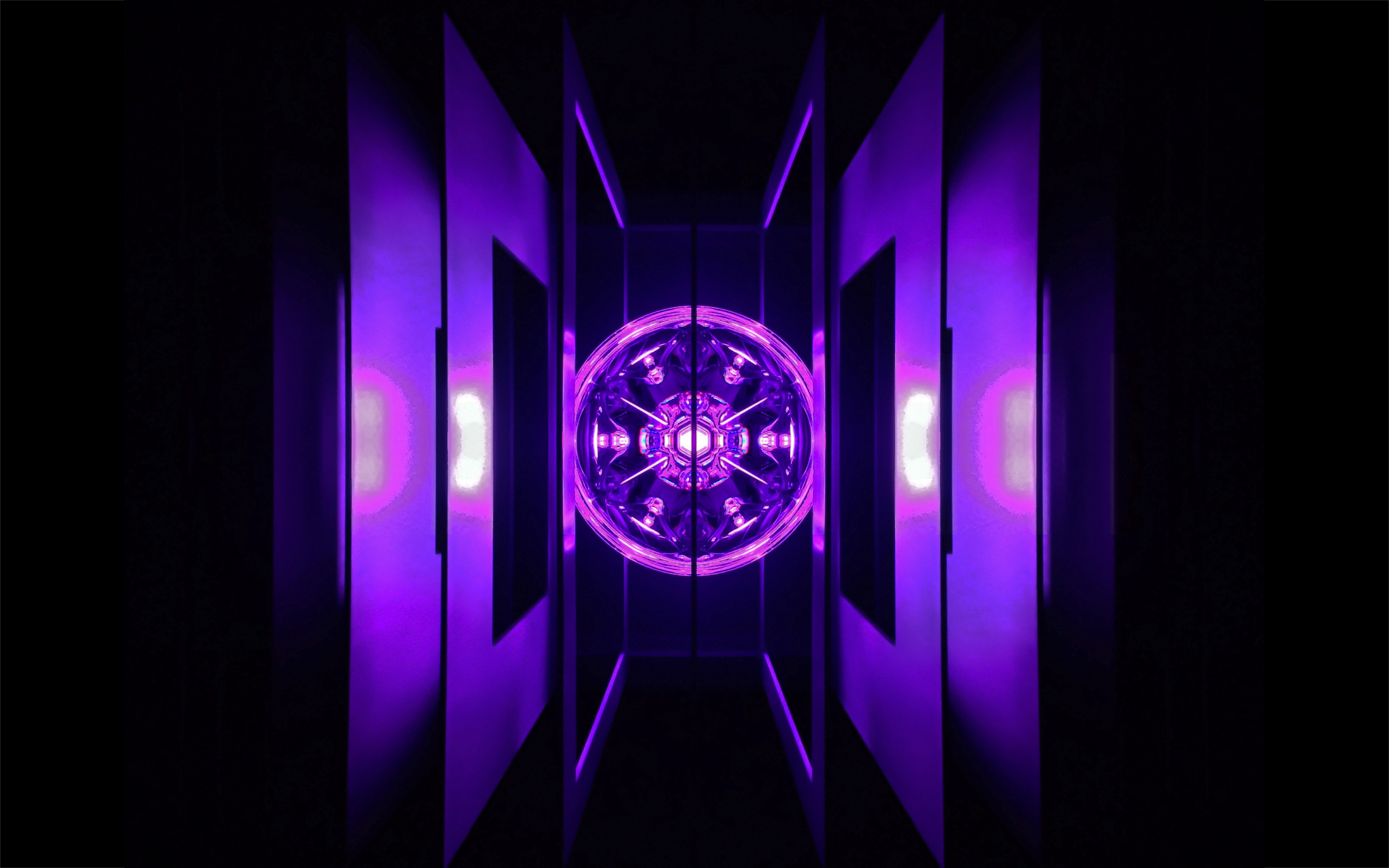
II AIR : The Cube

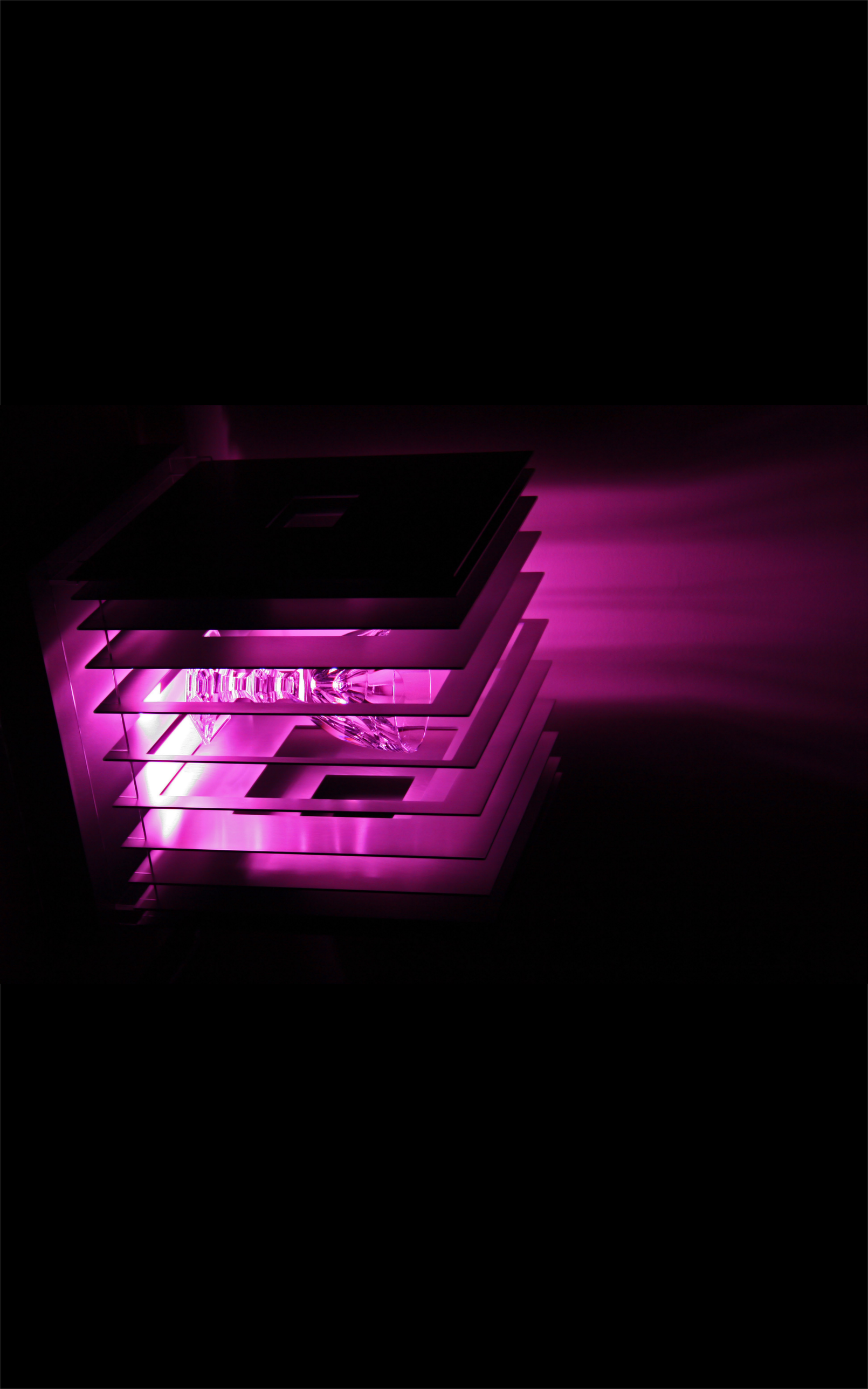
In Euclidean geometry, the four-sided square follows the triangle.
The first drawings of squares date back to prehistoric times. Along with circles, squares have been the most studied simple geometric shapes since ancient times, and the problem of squaring the circle enthralled mathematicians for two millennia.
The cube is one of the five Platonic solids and features in masonic symbolism, standing for the work achieved by the journeyman in transforming a piece of rough stone into a perfect solid.
It is a striking fact that the first hexagram – a symbol which incorporates both Yin and Yang and appears in I Ching and Taoism, the main philosophies of Ancient China – is made up of identical parallel lines forming a square, just like those used in the Air installation. It stands for creativity and the sky.
The cubic volume is made up of a succession of hollow squares symbolising a breath of air. The perceived volume is delimited by a series of ever-changing openings and varies constantly depending on the viewing angle. Intriguing details of the Glass are revealed in profile as though through windows, until a face-on view finally unveils the whole Glass.
This kinetic installation presents the Harcourt Glass as though it were a gem in a jewelled setting. The empty space in each successive layer is akin to light radiating from the magnified, diamond-like Glass.

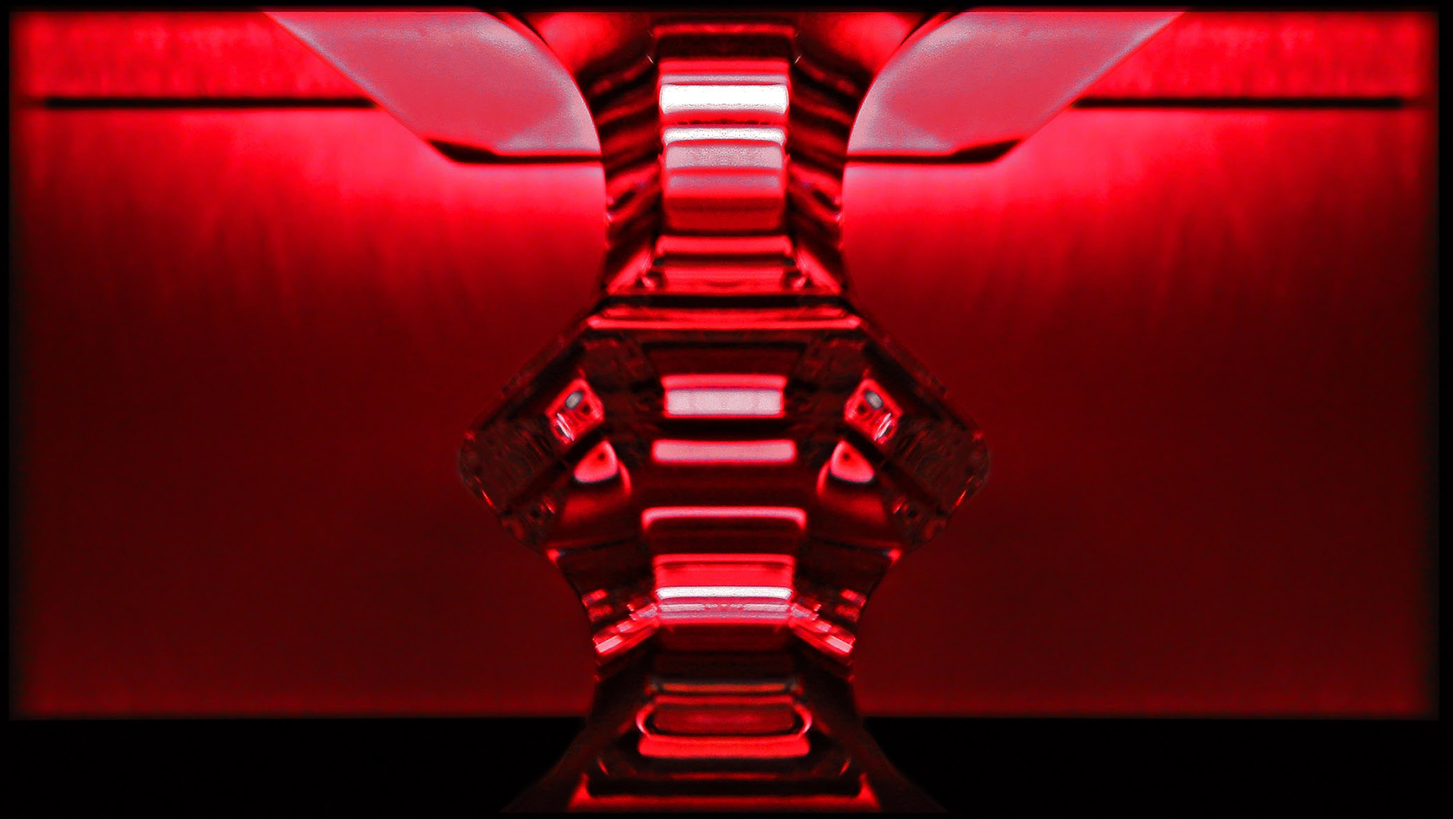






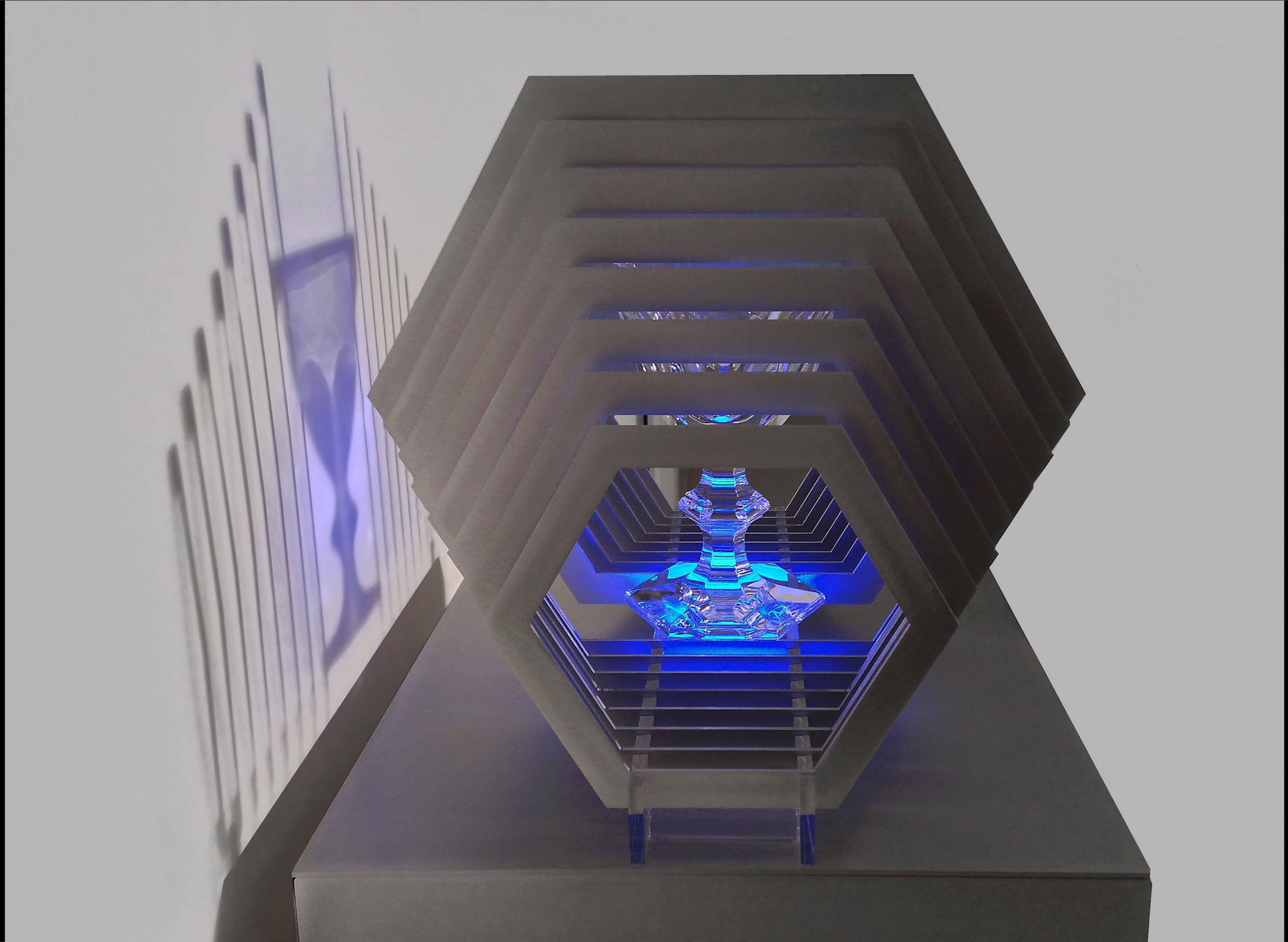


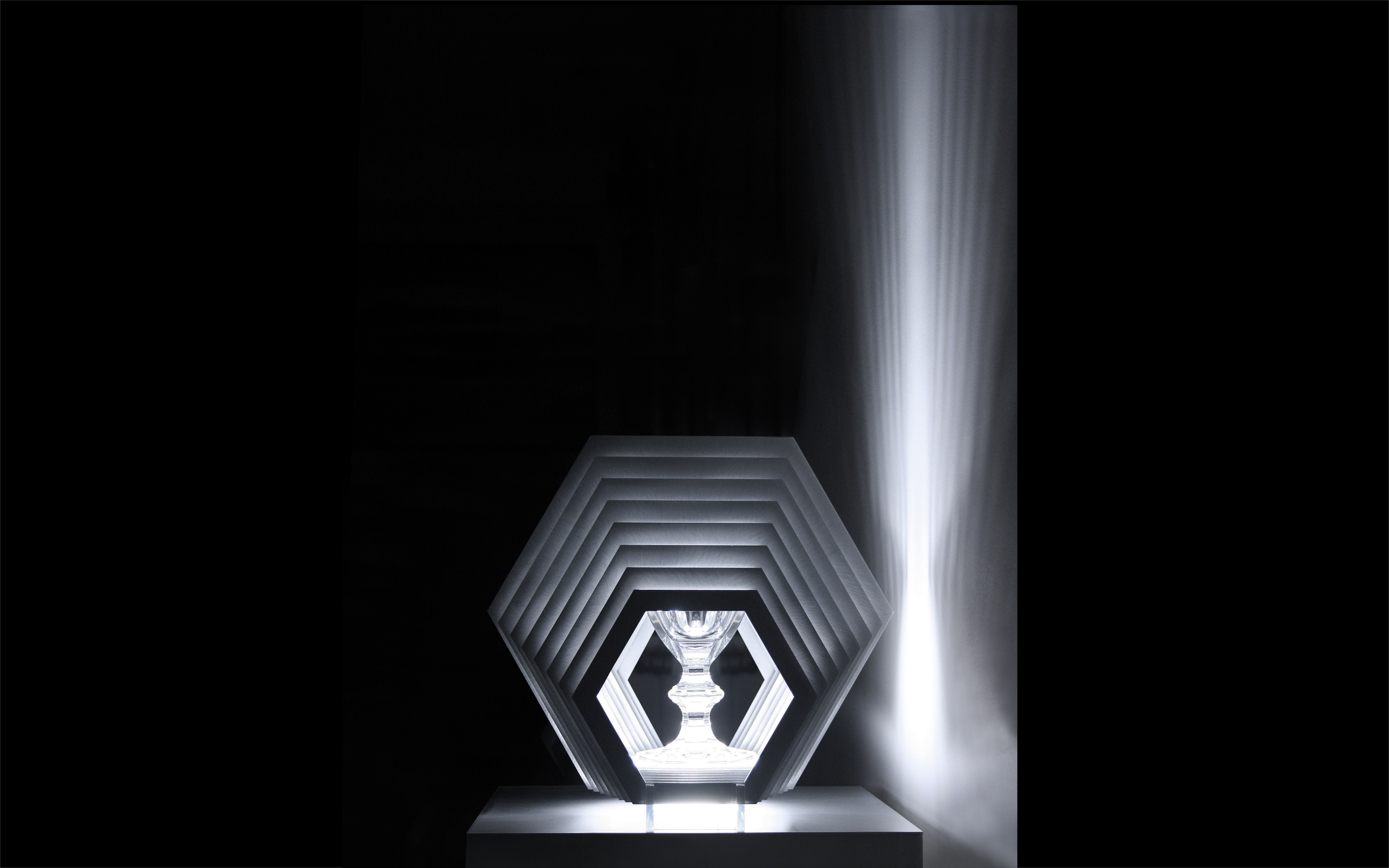


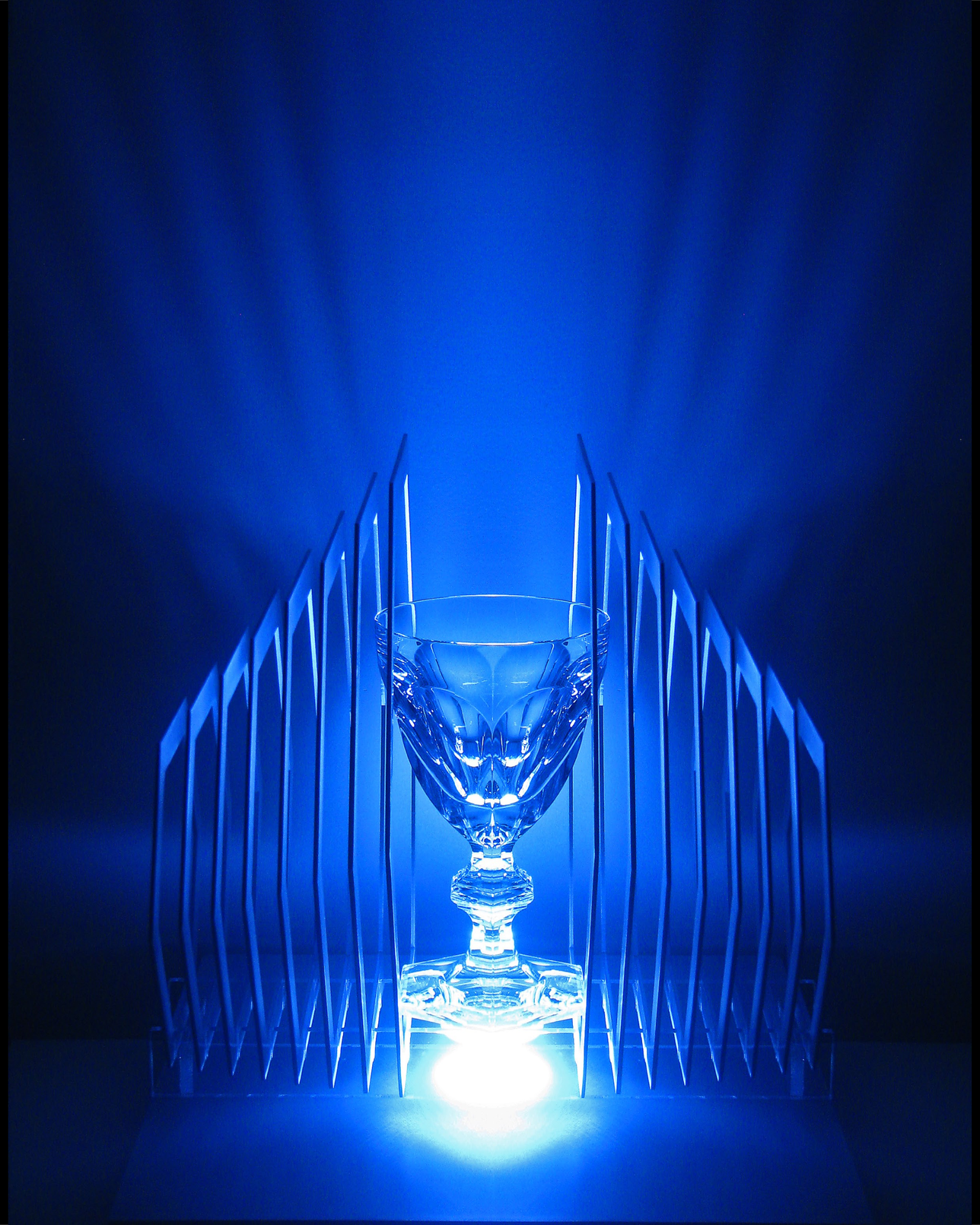


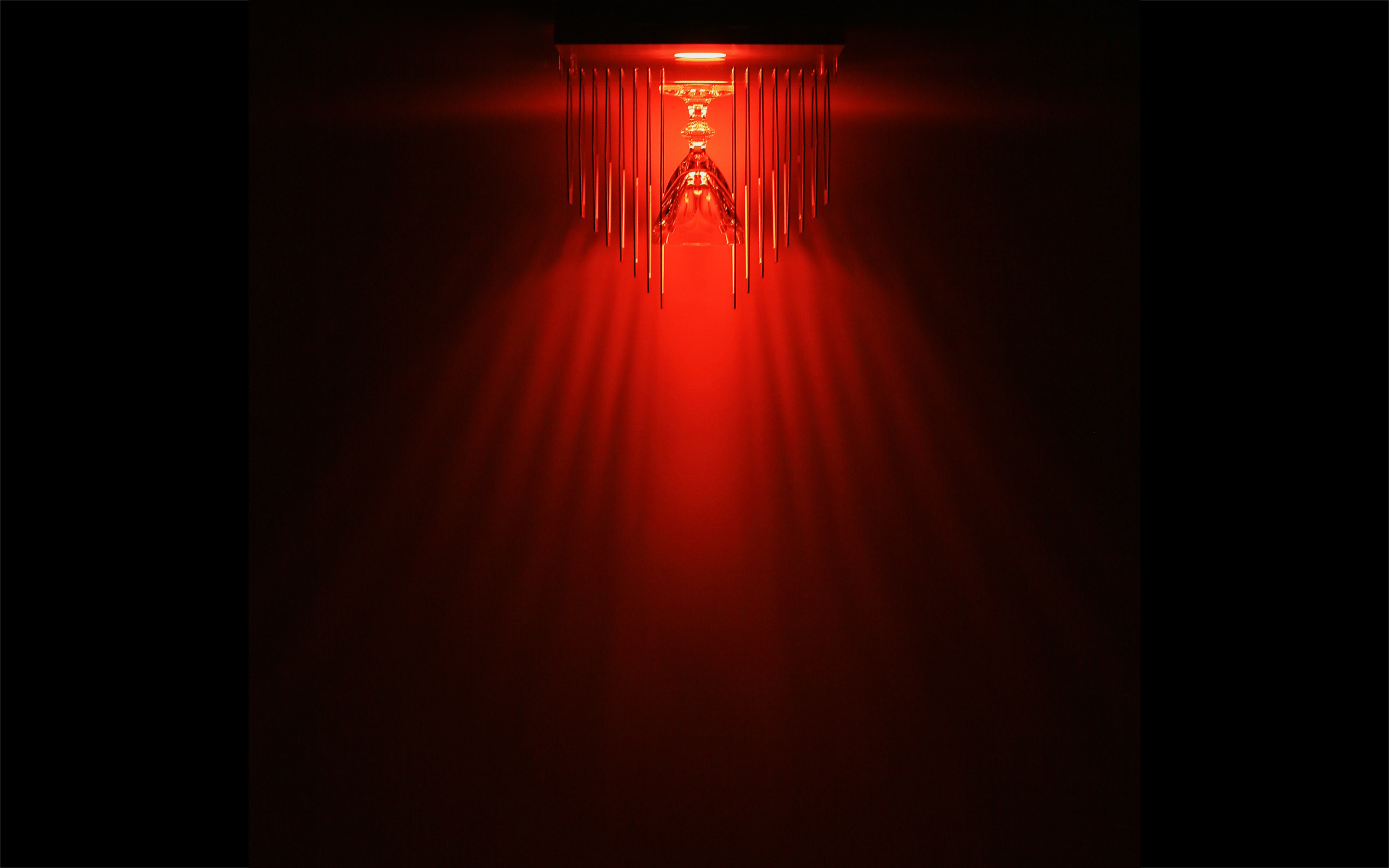
III WATER : The Hexagon

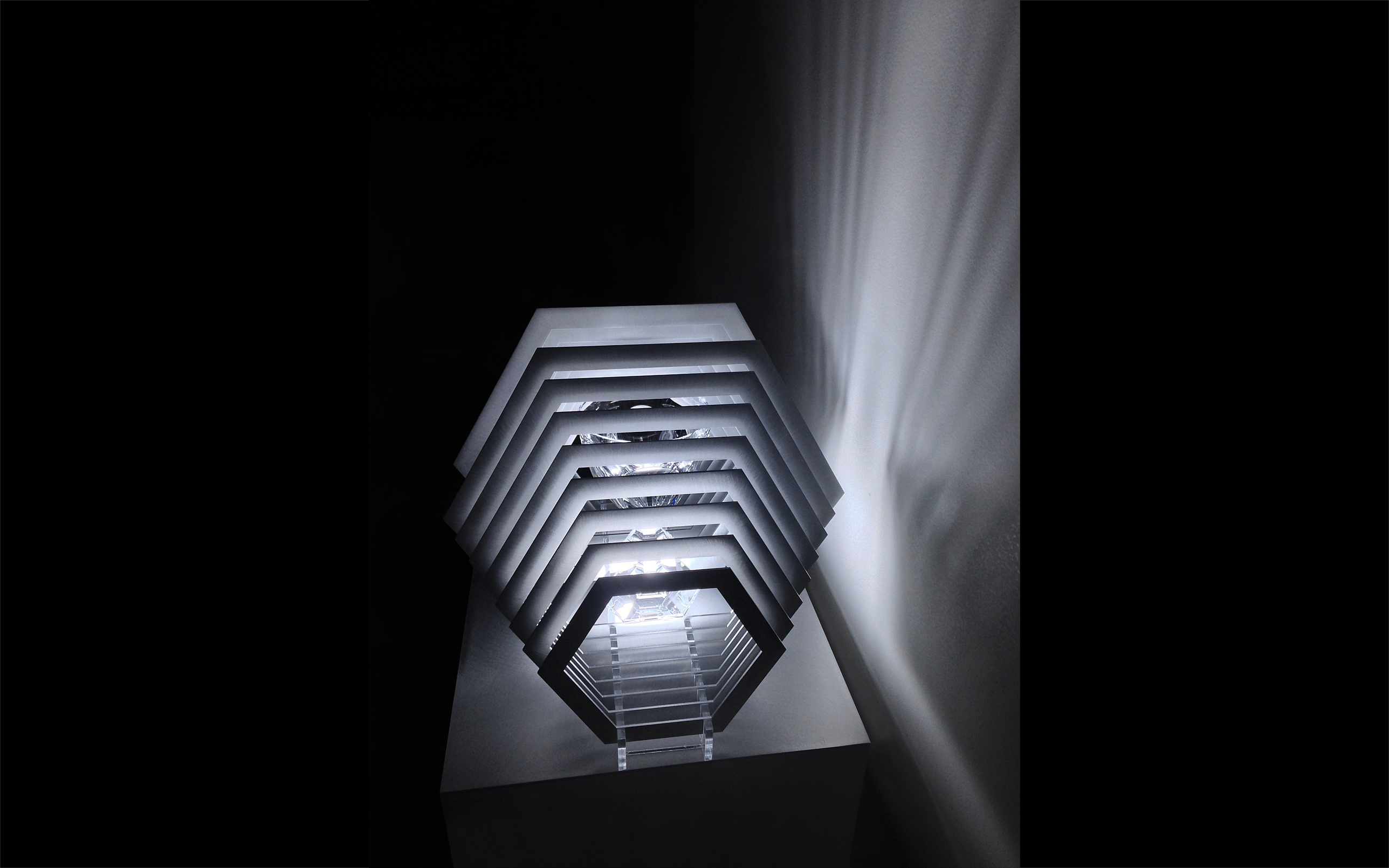
The six-sided hexagon follows the square in the geometric sequence.
Of all the regular tessellating figures, the hexagon covers the largest surface area for a given perimeter. This means that it is a recurrent feature of our environment, whether natural or man-made. Certain mineral crystallisations naturally assume this geometric form, such as snowflake crystals which are formed into regular hexagons by their constituent water molecules.
Water is the fourth element and the *sine qua non* condition for life on earth.
The hexagon is also the symbol of France, the country where Baccarat was founded, and one where a long tradition of excellence in the fields of art and craftsmanship has yielded a brilliant cultural heritage.
Finally, the symbol of water mirrors the fundamental nature of a glass as the natural receptacle for the substance, and the outline of the installation, which echoes the Harcourt Glass's hexagonal base and thus highlights the formal links between the two.

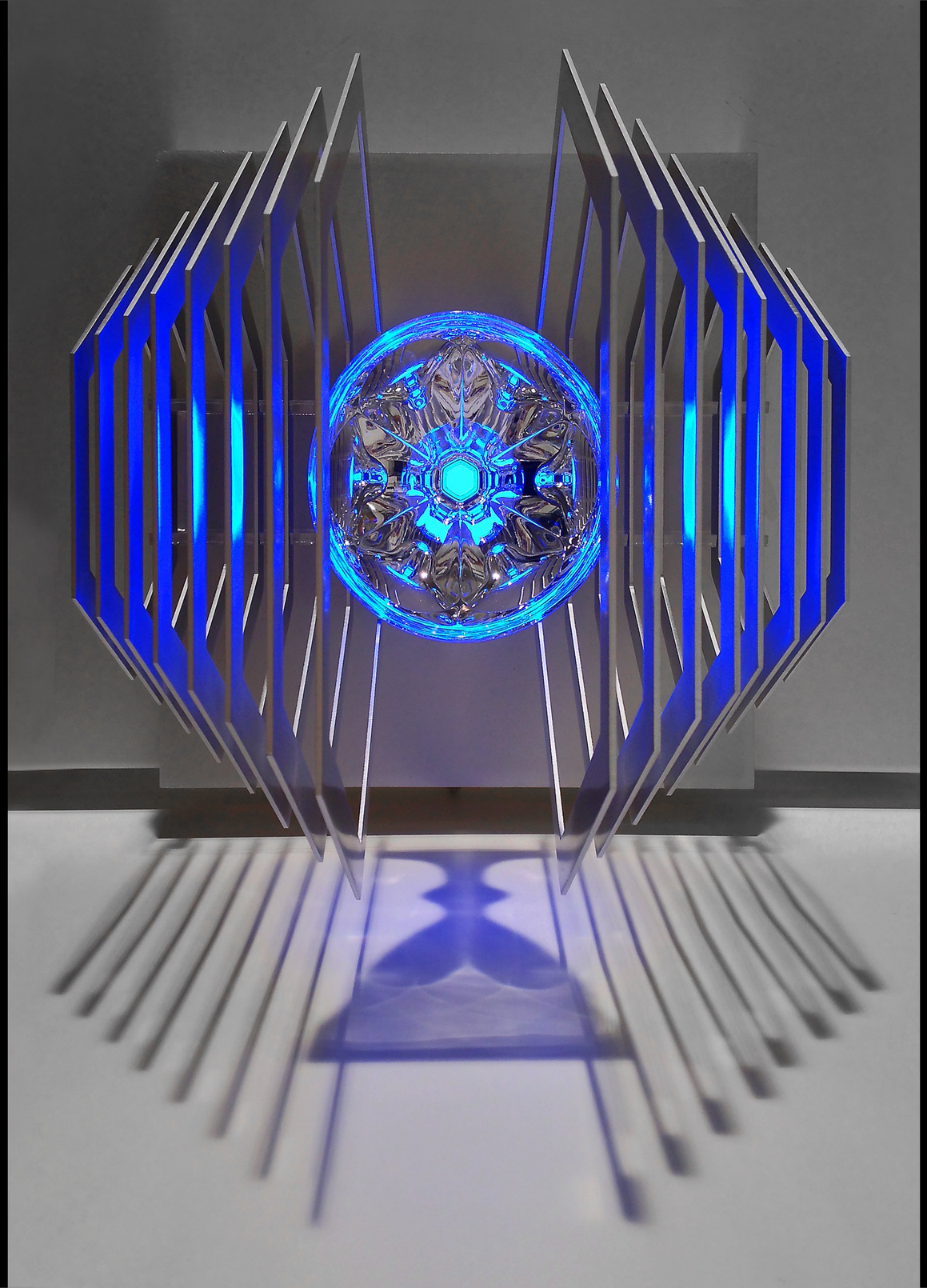


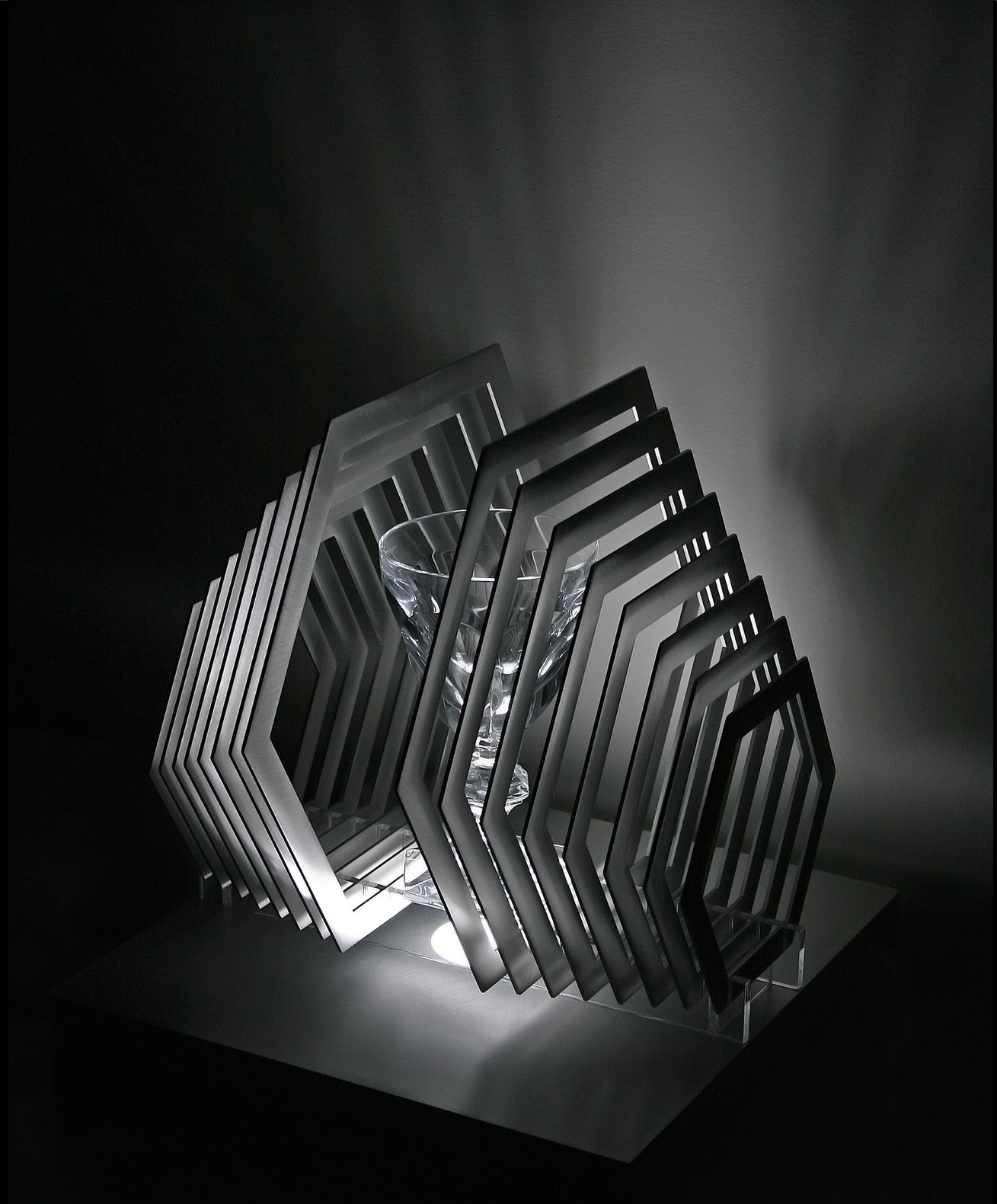


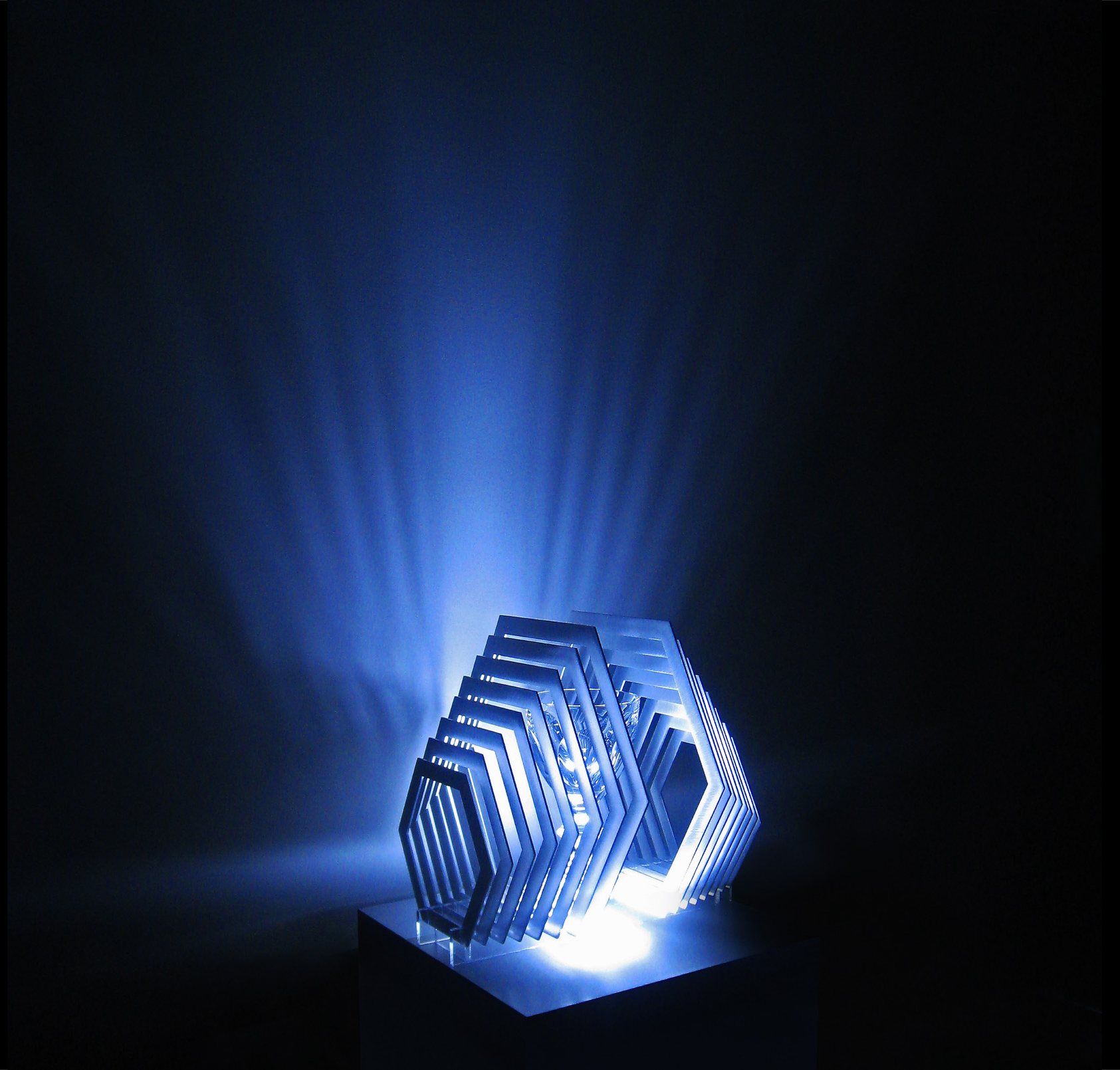


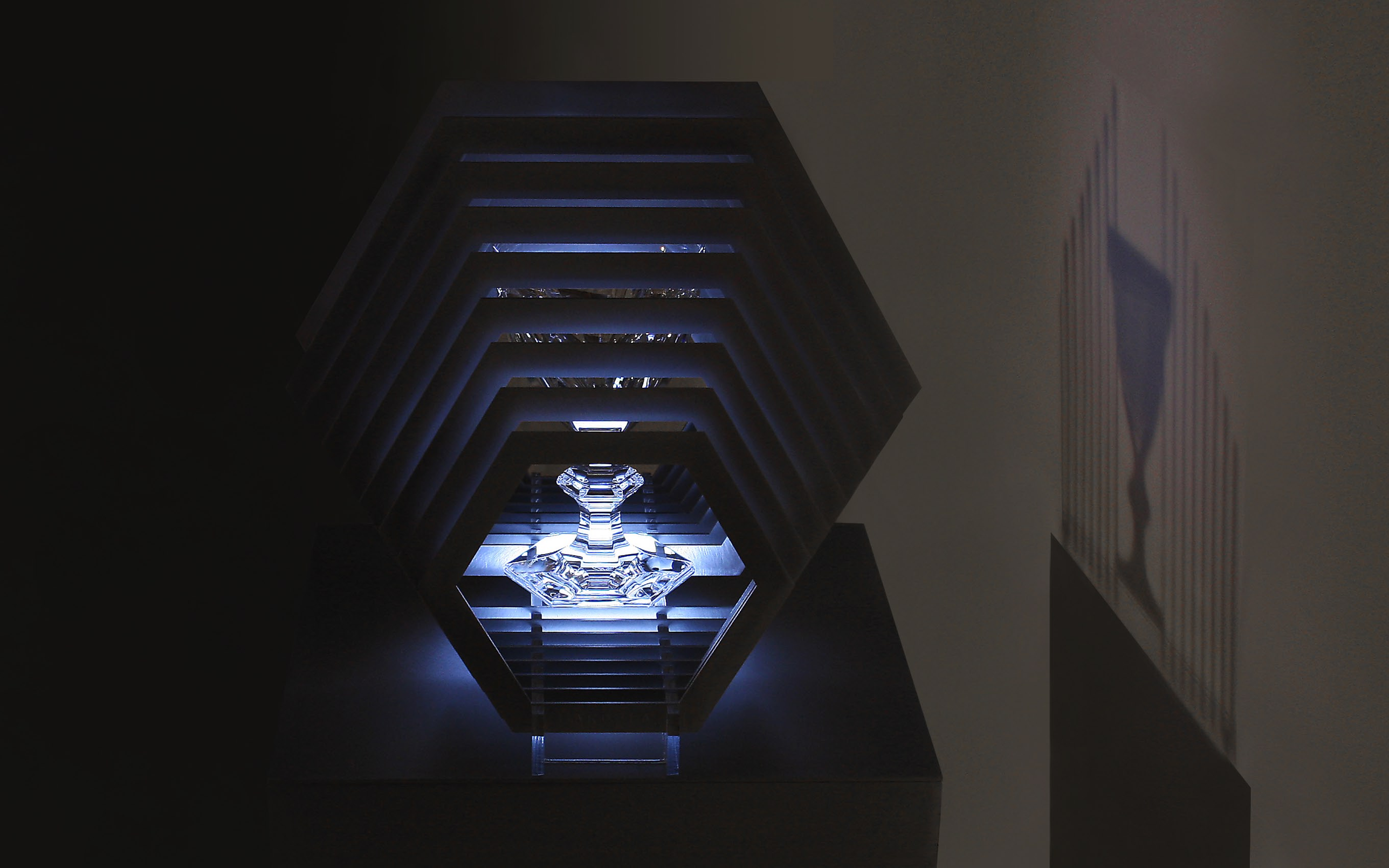


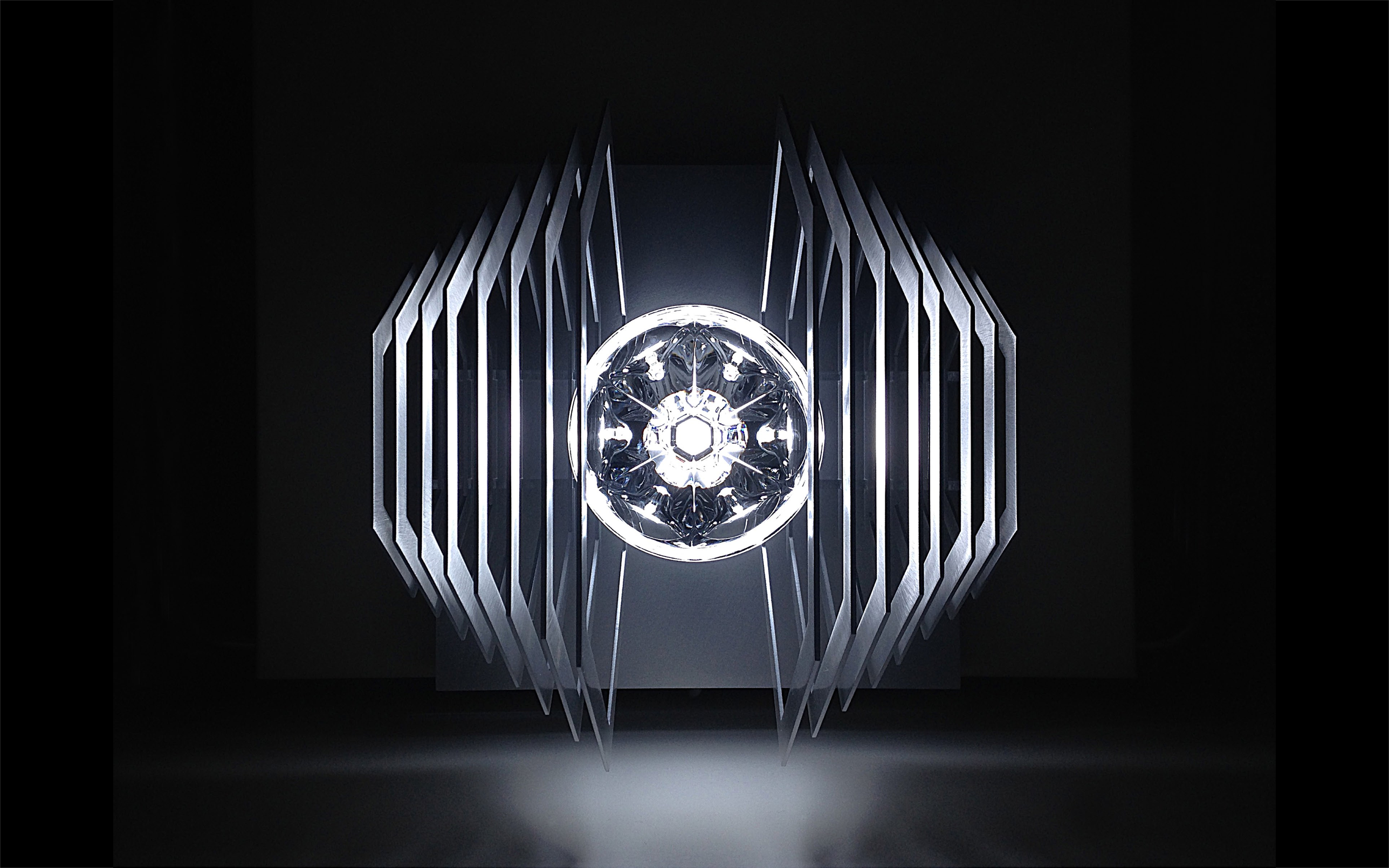


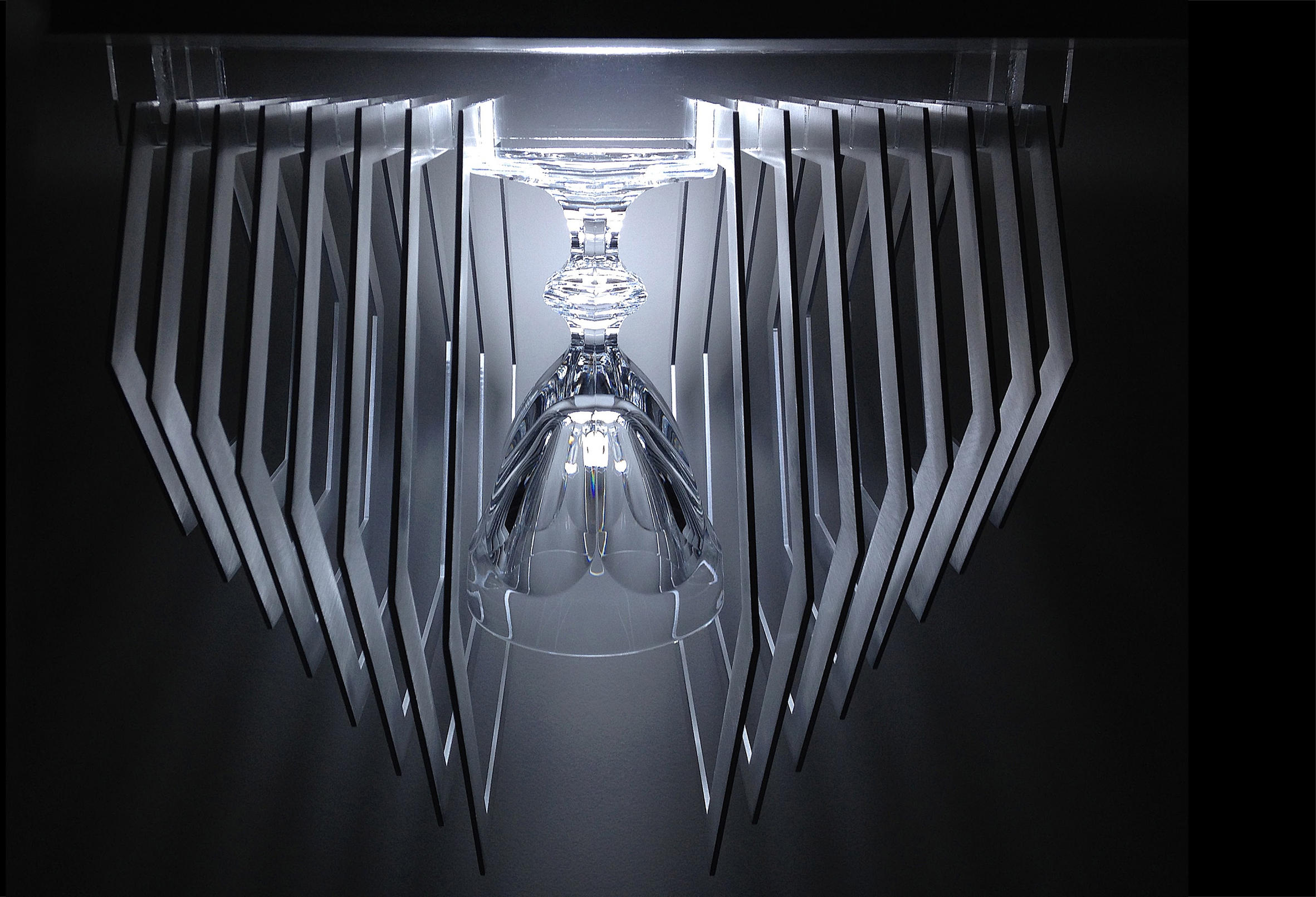






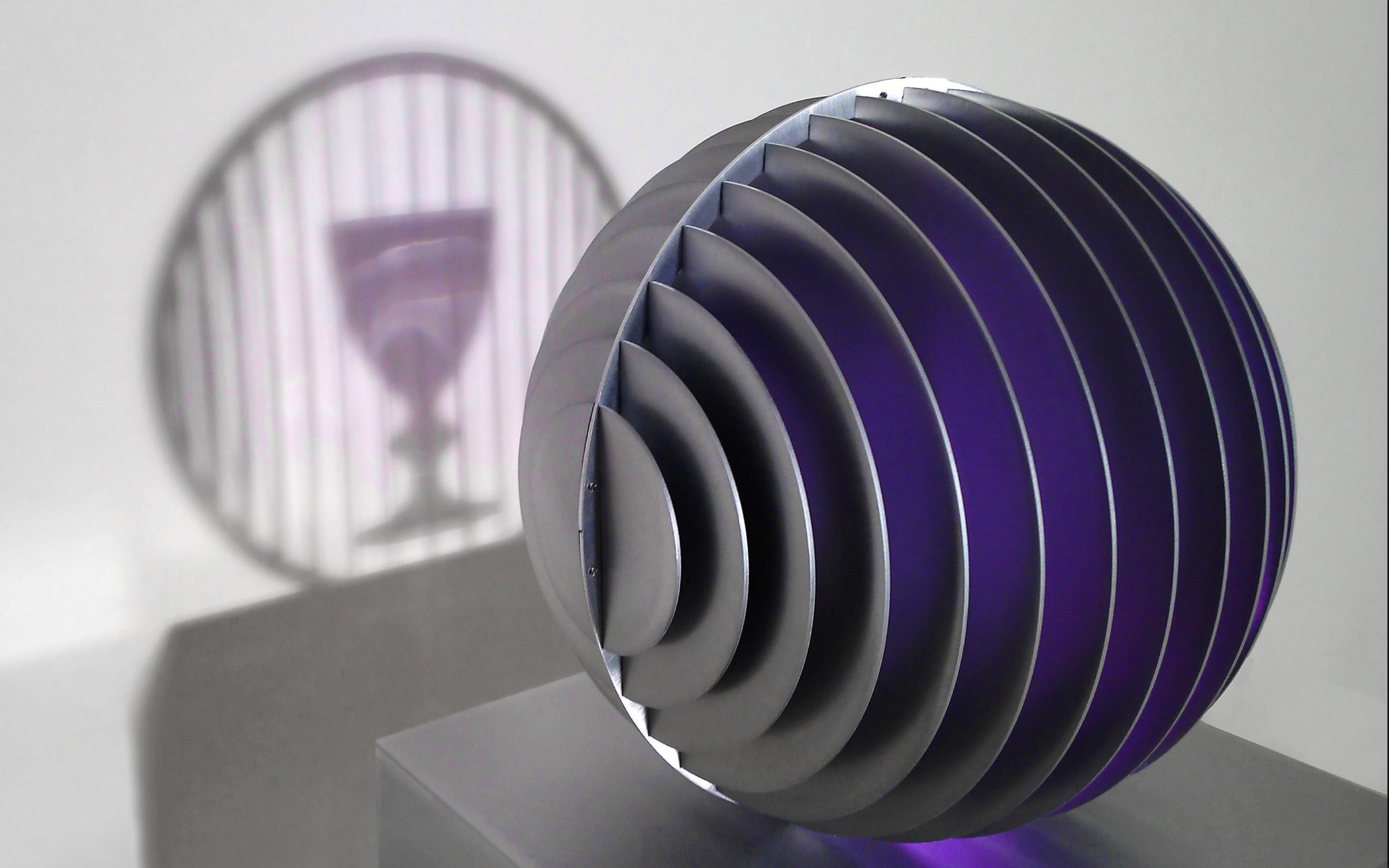


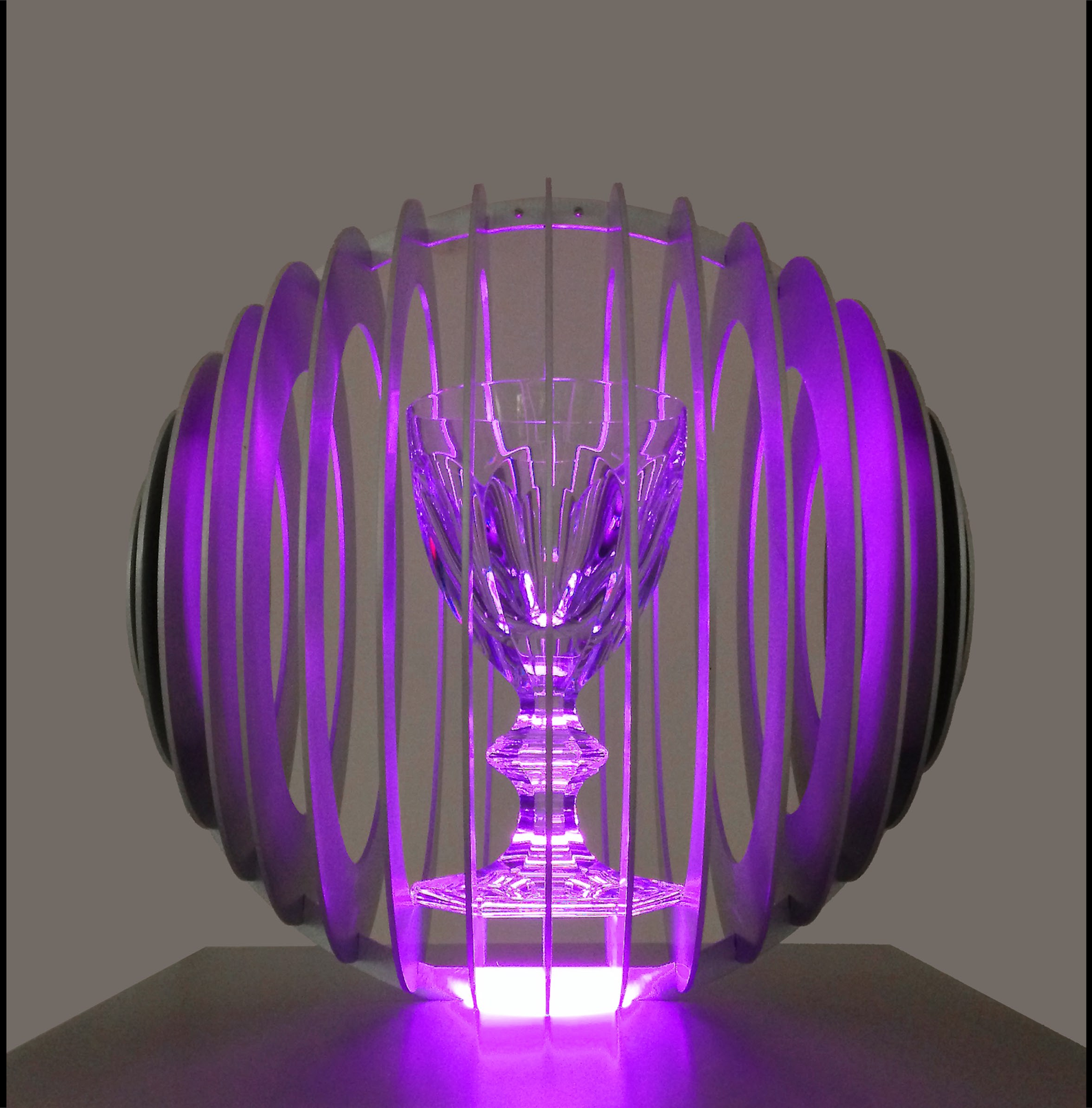


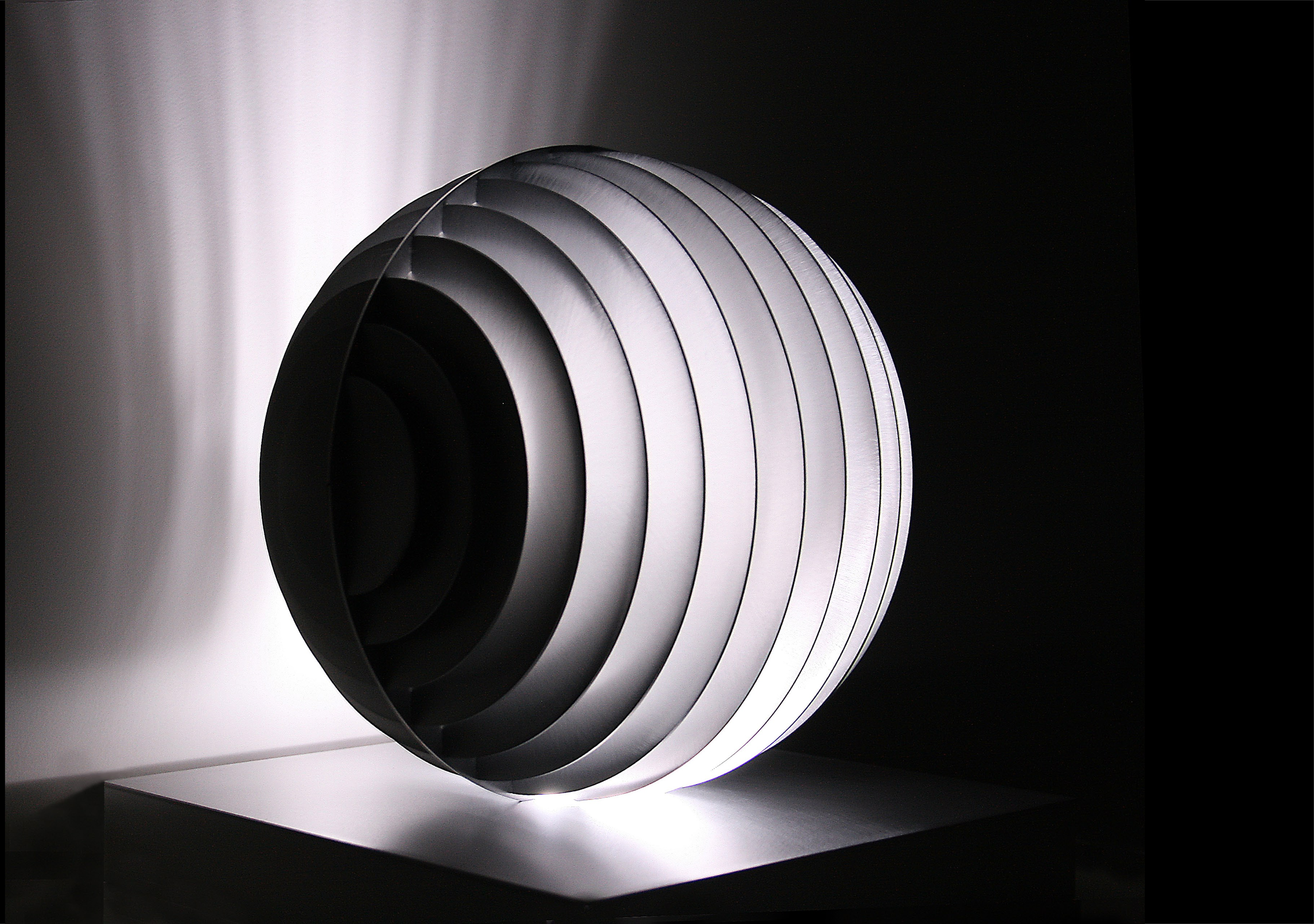


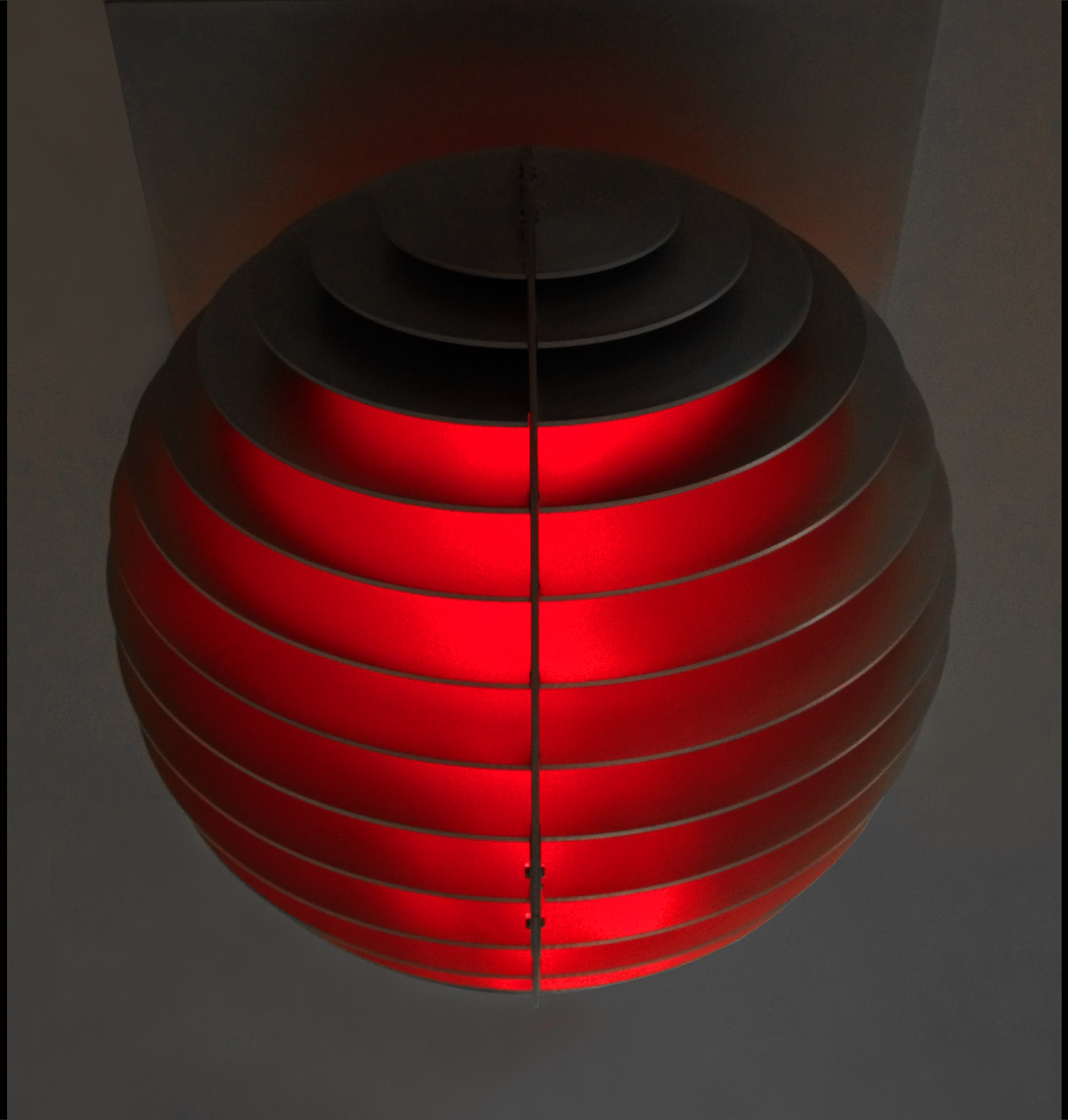
IV EARTH : The Sphere

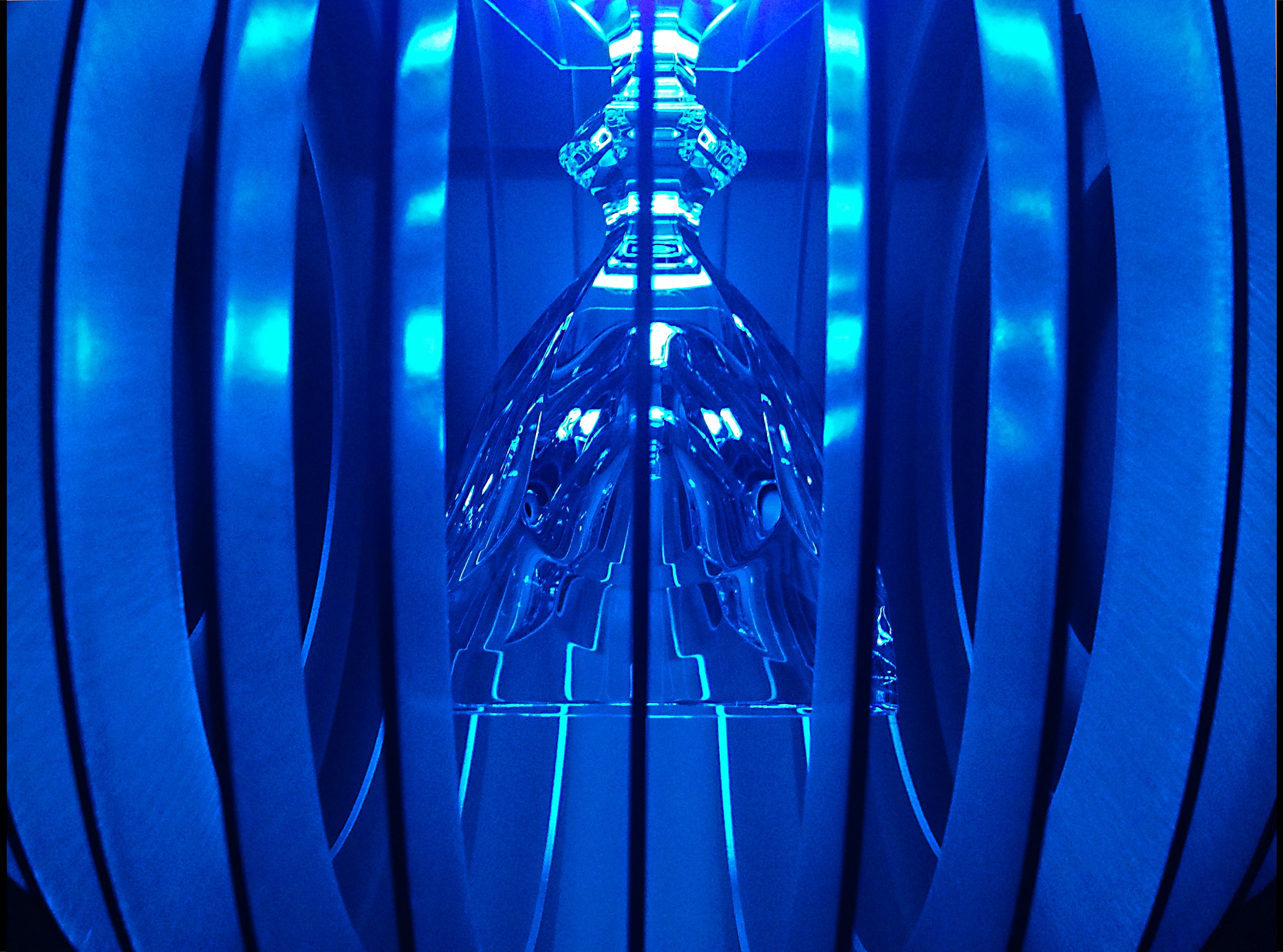
In geometrical terms, a circle can be considered to be an infinitely-sided shape and a sphere to be a shape made up of an infinite number of circles.
The sphere has the smallest surface area of all surfaces that enclose a given volume, and it encloses the largest volume among all closed surfaces with a given surface area. The sphere therefore appears spontaneously in nature; for example, bubbles and small water drops are spherical because the surface tension minimises surface area.
The original creation myths explain the beginnings of the universe as a deliberate act of creation by a superior being. Similar dogmas were found throughout the ancient world, and they share the virtue of expressing perceived truths at a symbolic level. Many of the creation myths have themes and concerns in common, such as the splitting of the earth's constituents amidst the primordial chaos or the earth emerging from an infinite and timeless ocean.
The sphere in this installation stands for Earth, the last of the four elements. The Harcourt Glass is placed in the centre as an allegorical reference to the alchemists' much-beloved "transmutation of matter". Having emerged from the magma at the centre of the earth and finally reached a crystalline form, the Glass also represents the rock cycle: tectonic plate movements give birth to mountains which are then eroded into grains of sand and carried away by rivers, and the silica in this sand is used as the raw material for glass and crystal manufacturing.
From a formal perspective, the installation is made up of a series of discs and rings which serve to create a double sphere; the first solid sphere has a hollow at its centre which forms a second sphere. The Harcourt Glass appears to be suspended in the centre of this second sphere, radiating outwards as though from the centre of the earth. In this installation too, the Glass is visible merely as a projected shadow when seen in profile, gradually revealing itself until it can be seen in its full grandeur face on, like a revelation of secrets to initiates.
Earth is the most technically complex of all the installations, and its execution required in-depth research into infographics to maintain the geometric purity of the original sketch.







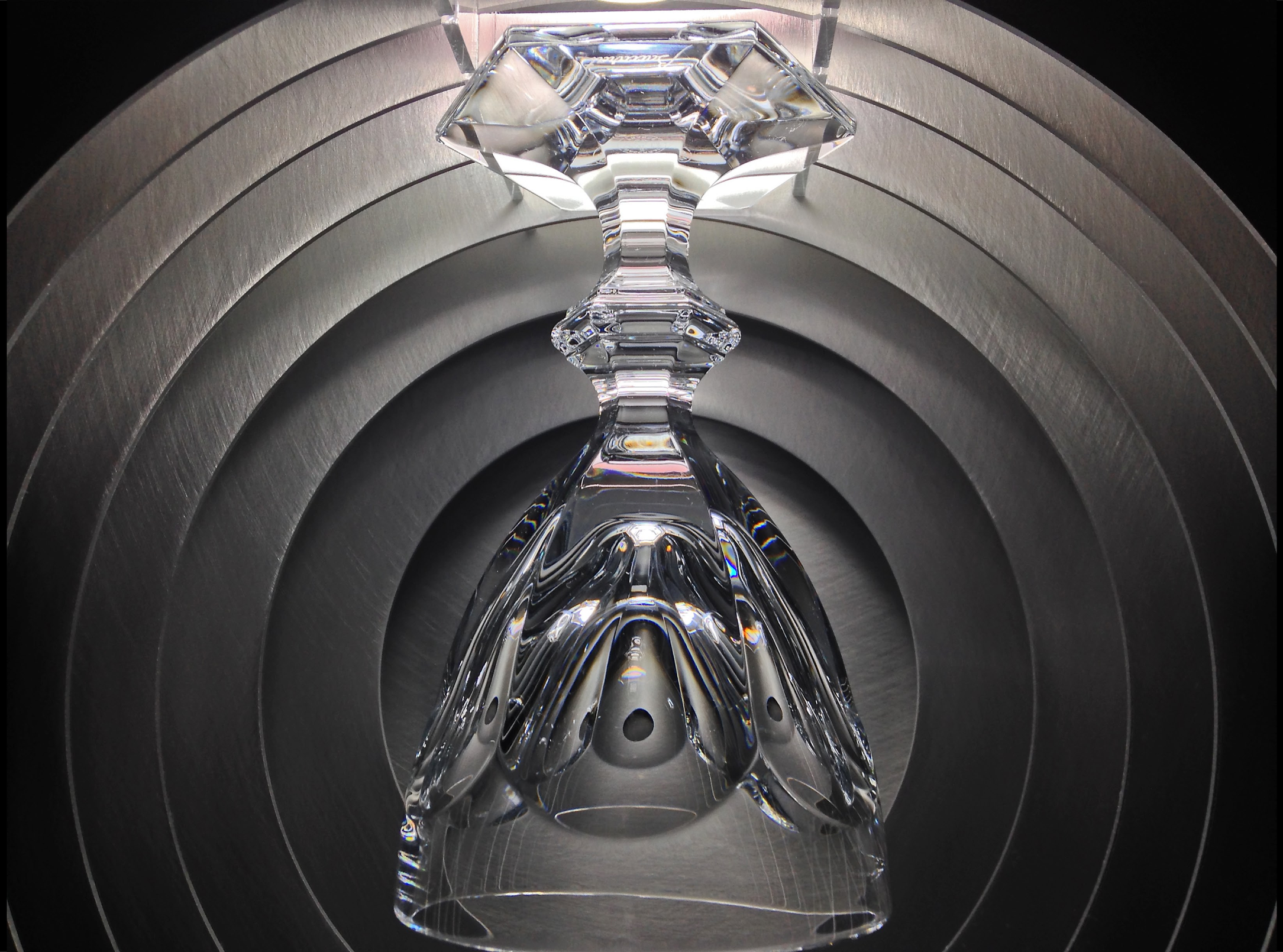


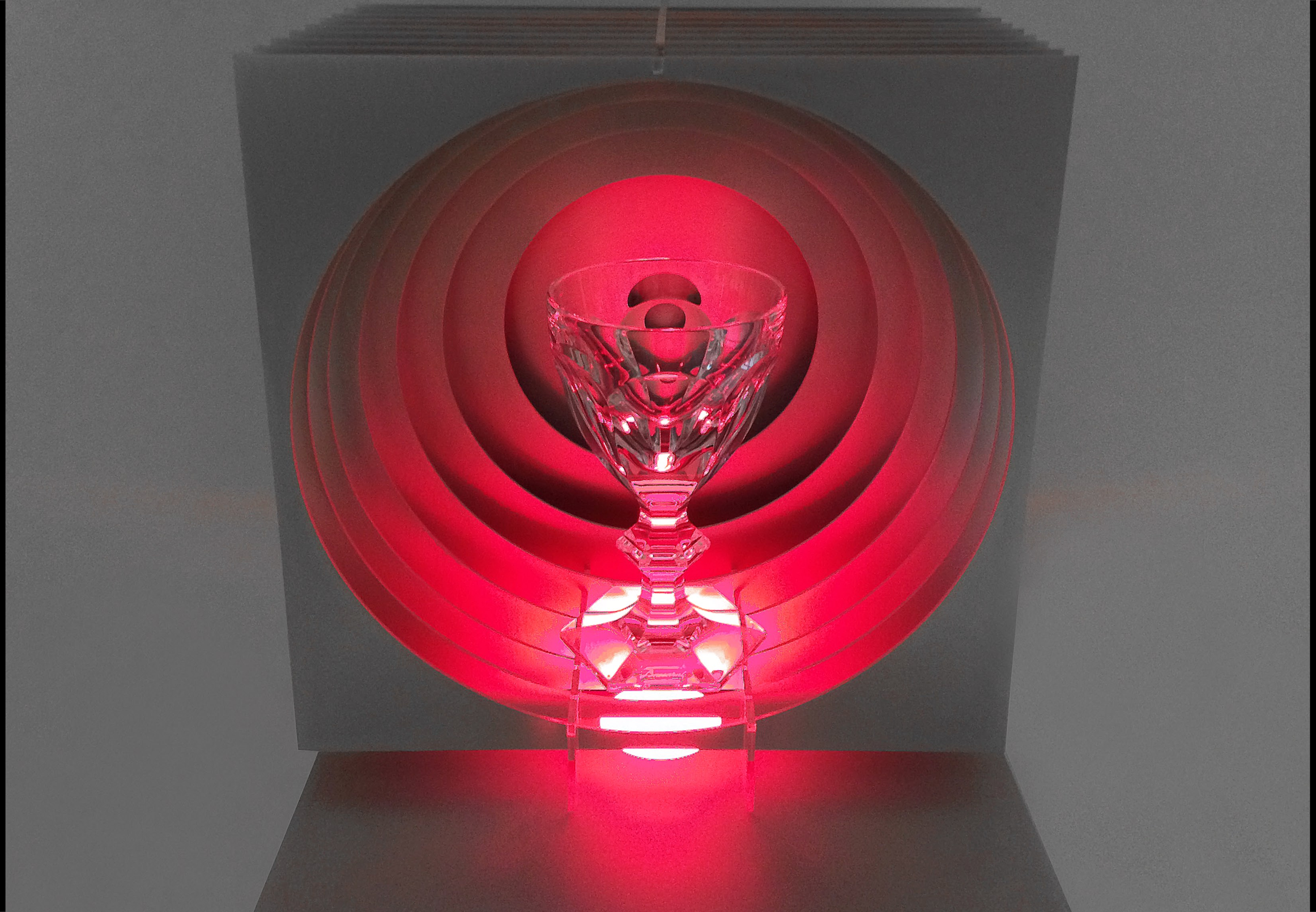


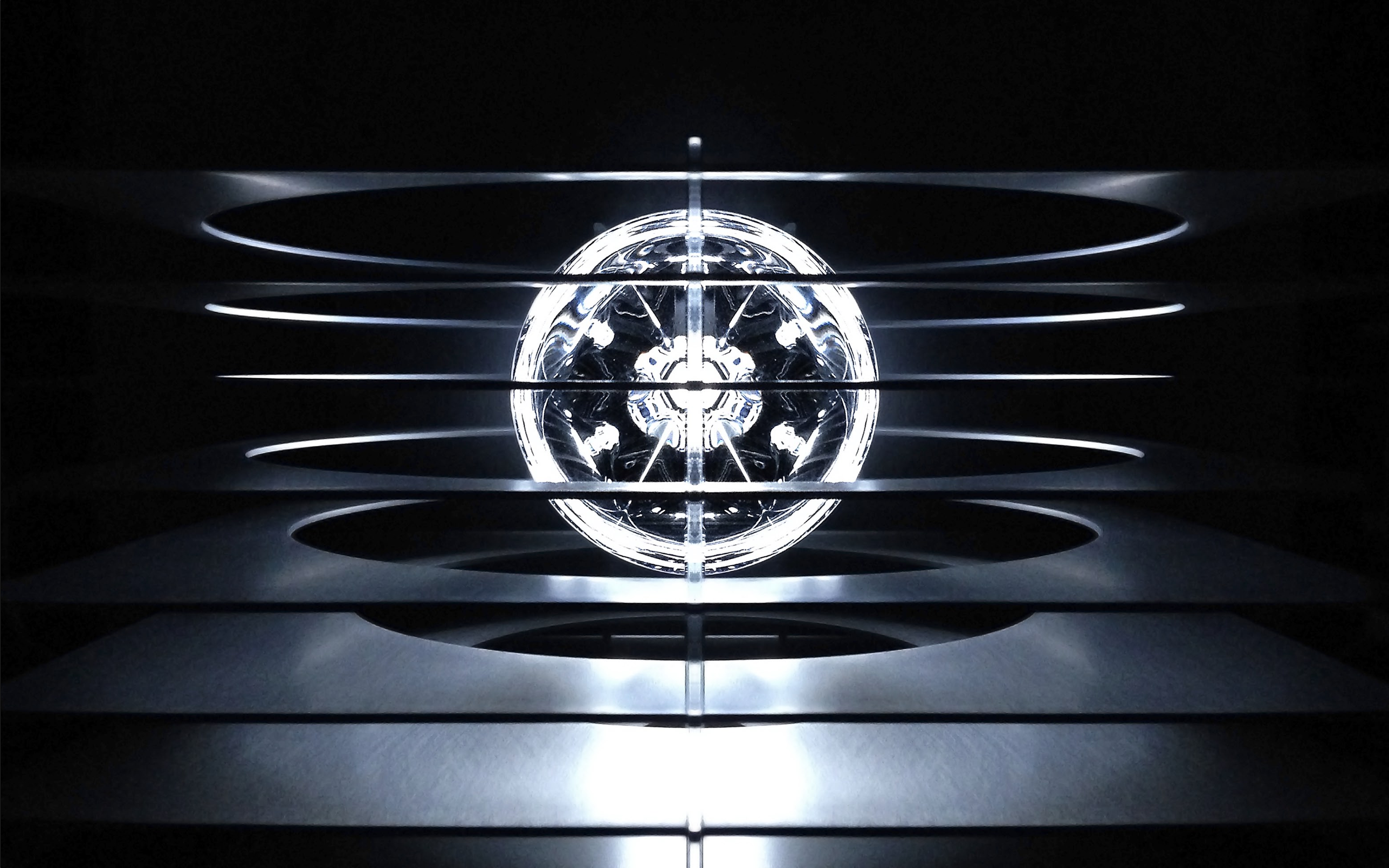
V QUINTESSENCE : The Sphere inscribed in a Cube

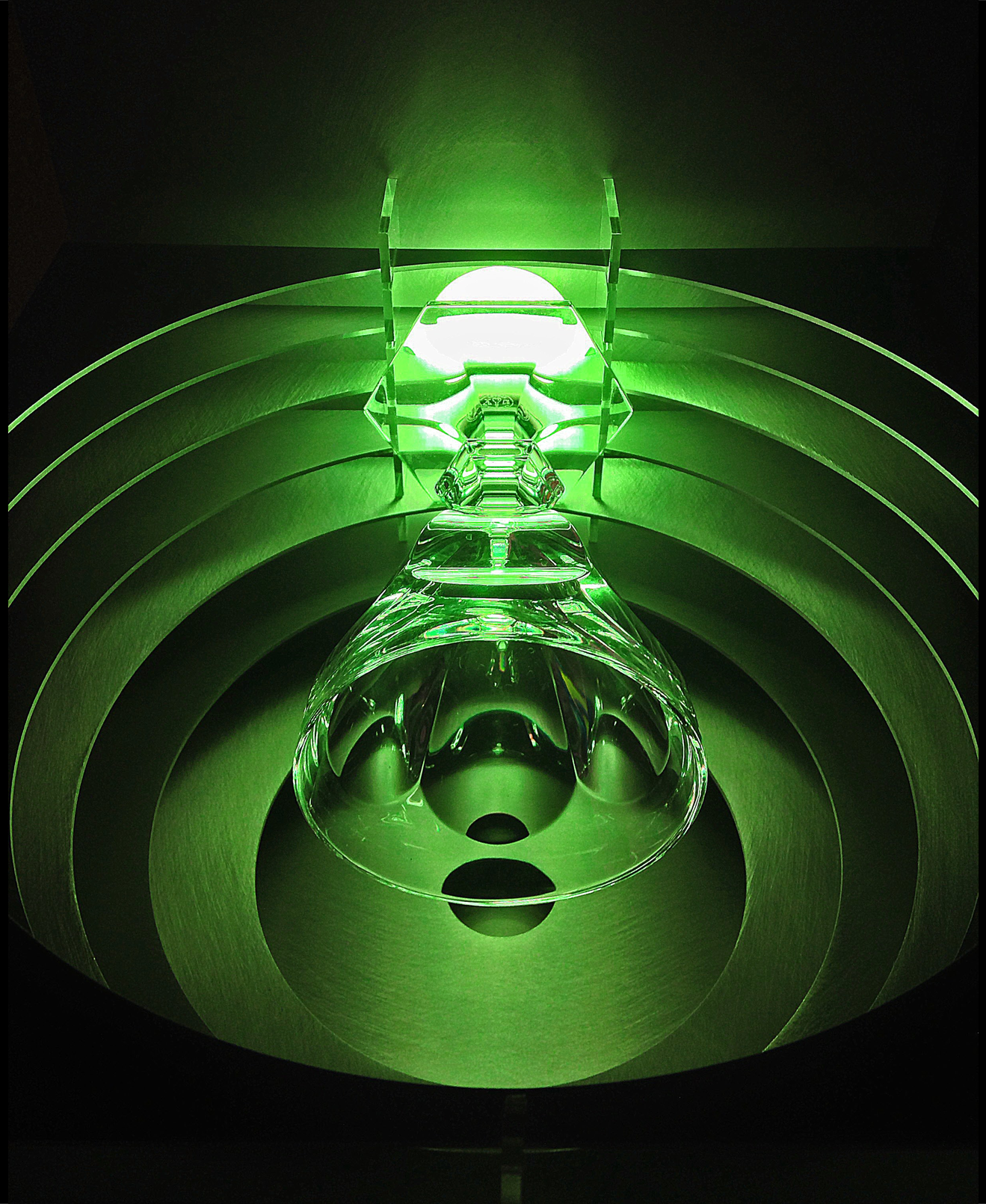
This installation is a reinterpretation of the universal symbolism of the squaring of the circle.
Quintessence was the name given by the ancient philosophers to the ether – the element which filled the universe and the infinite expanses beyond fire, air, water and earth, and which held everything in its place.
The term was also used by the alchemists, who called themselves the “abstractors of the *quintessence*”, and by the freemasons who followed the same precepts.
The use of the term *quintessence* in cosmology is a nod to the Ancient Greek concept of the ether.
There are four different types of matter or energy in the universe: baryonic matter, made up of common atoms; photons, of which the cosmic microwave background is composed; neutrinos, produced during the Big Bang and forming the cosmic neutrino background; and black matter, the exact nature of which is unknown.
The quintessence is a potential model for the recently posited dark energy, which is the hypothetical fifth form of energy present in the Universe and has been suggested as a possible explanation for the fact that its expansion can be seen to be accelerating.
By way of tribute to the Renaissance’s humanist ideas, the Harcourt Glass is symbolically inscribed in a circle like Leonardo da Vinci’s Vitruvian Man. It thus serves as a representation of Man and his capacity to discover, understand and create – the quintessence of the expertise we have acquired since the discovery of tools and the mastery of fire, metal and glass as determining factors in the history of our civilisations.
This fifth work elevates the Harcourt Glass beyond its status as a relic into the realms of a time-honoured icon, by framing it within a contemporary modernity and “squaring” it in order to impart illumination and hence immortality.

B A R D U L A
Paris, October 2014.

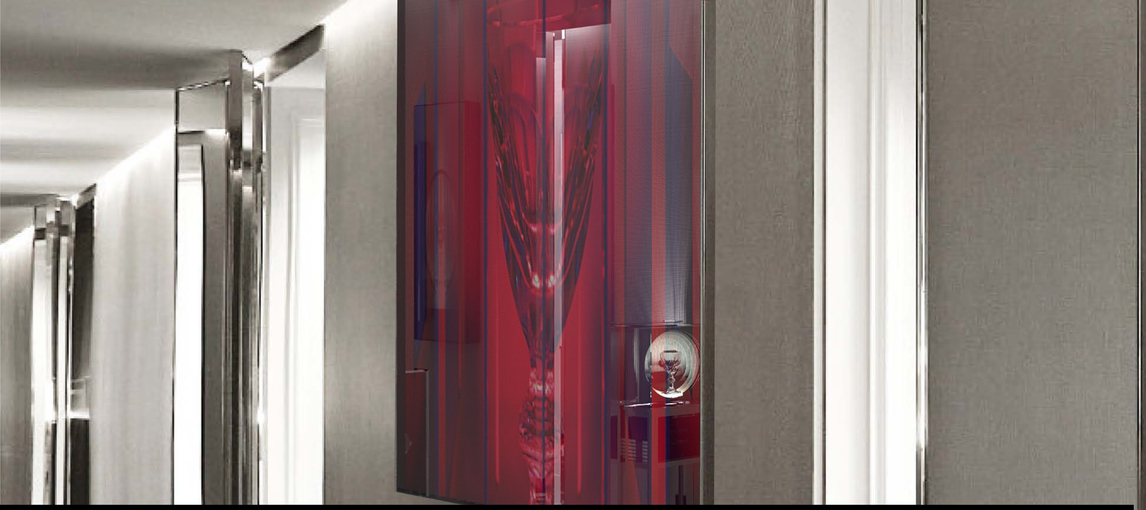








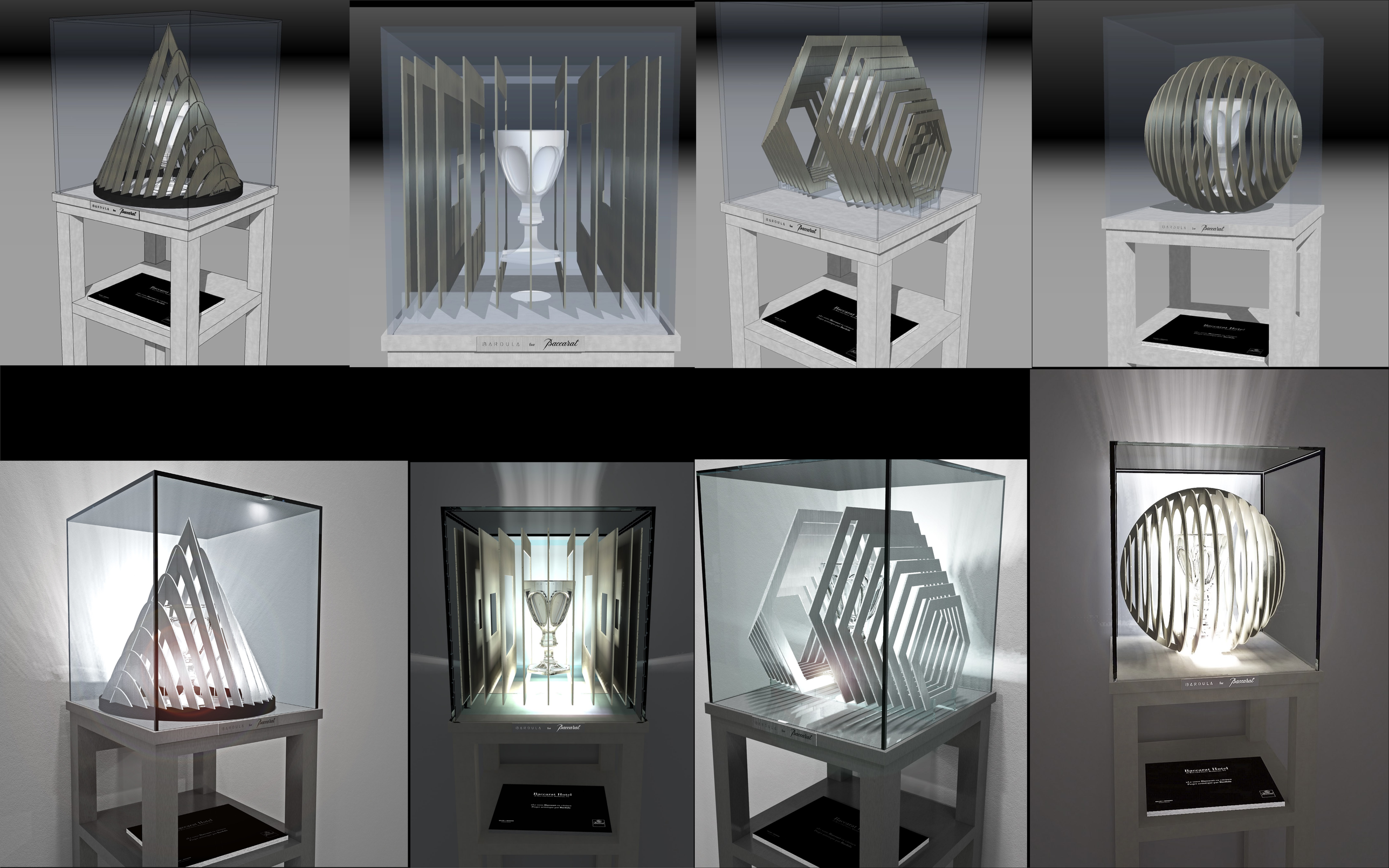
Baccarat



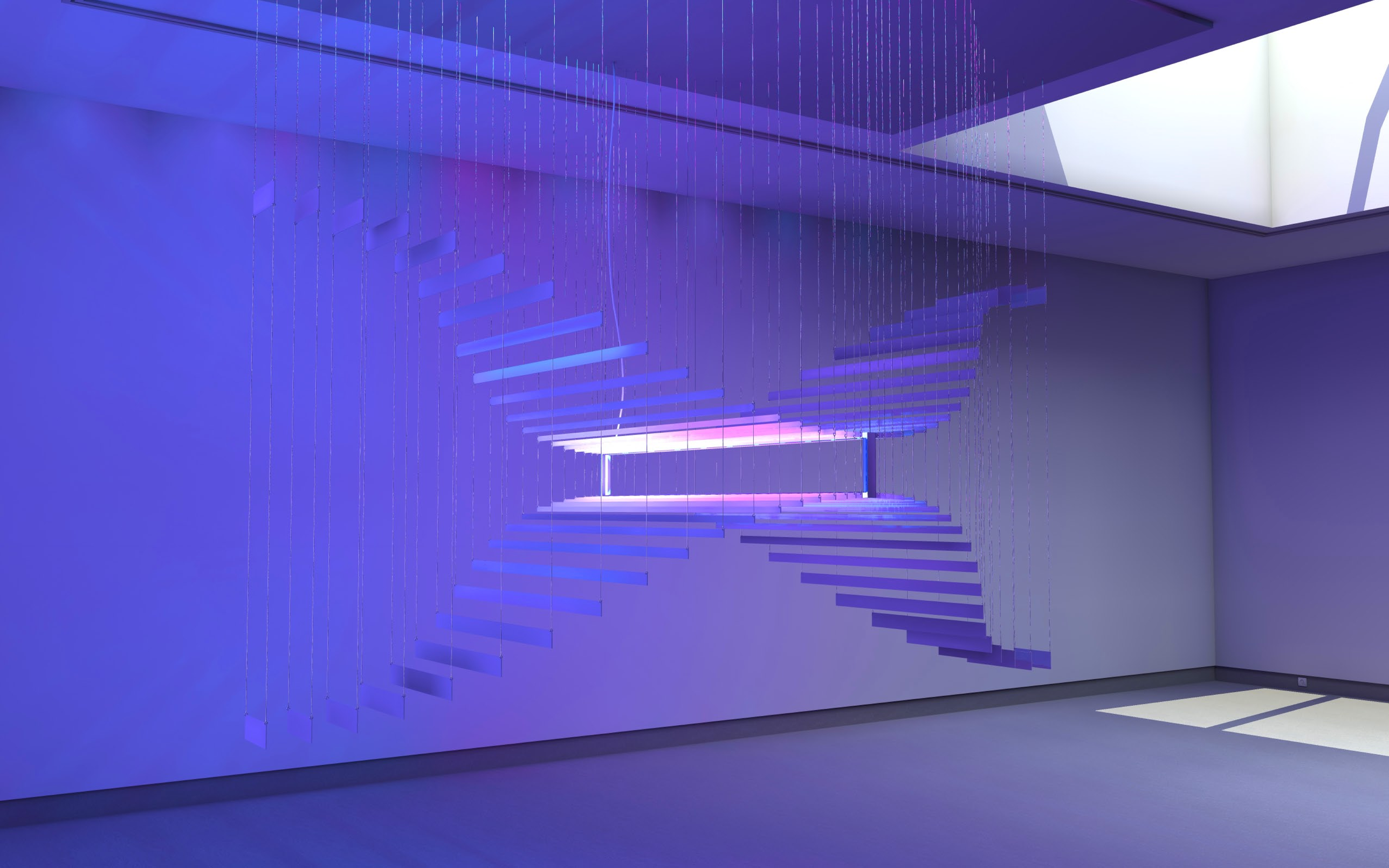
B A R D U L A S T U D I O

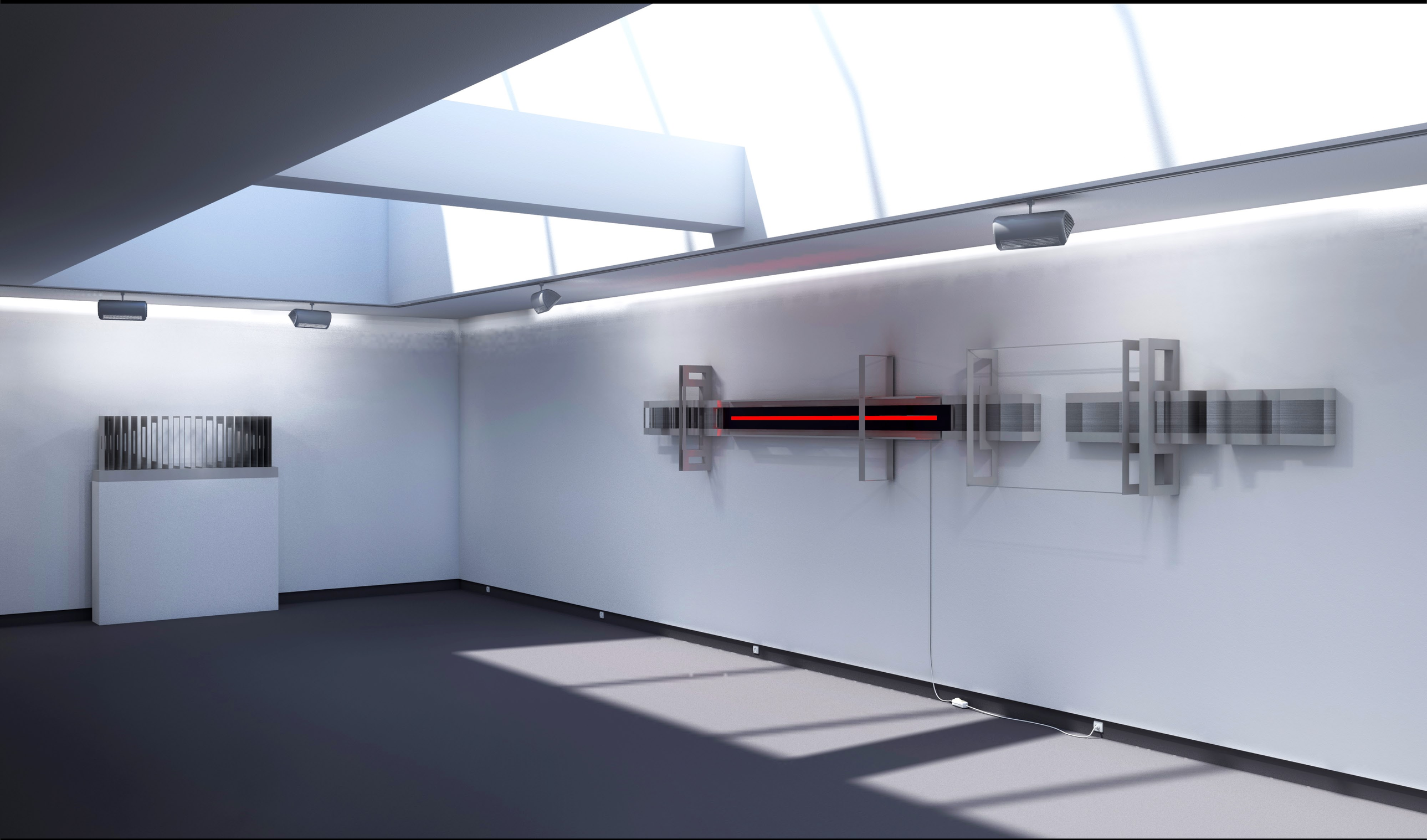
The Studio has its origins in an encounter between a visual artist/silversmith (Bardula) and an architect/scenographer in Paris back in 2003.
Their work reflects the former's passion for geometric abstraction and investigations into weightlessness and transparency, and the latter's fascination with new technologies, in particular 3D and light.
The silversmith began her career at the Royal Academy of Fine Arts in Antwerp followed by 10 years in New York, where she set up her first studio. Her work at this time was dominated by silversmithing commissions for collectors or jewellery for the MoMA boutique. After moving to Paris her work continued to use metal as a medium but became abstract, mainly comprising tableaux intended for private collections, such as the one at Freshfields on rue du Faubourg Saint Honoré, housed in an Art Deco building fitted out by Christian Liaigre.
After graduating from the Ecole des Beaux-Arts in Paris (UP1), the architect was drawn to scenography and 3D modelling before taking a job with Ora-ïto, all of which led to a gradual overlapping of his world with that of Bardula and a conceptual and technological symbiosis.
While remaining within the tradition of constructivist geometric abstraction and continuing to use metal as a medium, their work has come to be defined by the element of light. The use of digital models has allowed them to design increasingly complex structures, a new phase ushered in with the *Spacetime* installation.
3D modelling can be used to express, test and develop ideas to the point of both formal and technical perfection, by endeavouring to achieve the absolute flawlessness of the work as a whole. Rendering software creates images which are so accurate that it is hard to tell them apart from photographs of the finished result. This allows the precise visualisation of works which do not yet exist.
The first joint installation, *Xcube*, was completed in late 2012 and opened the way to the *Propagations* series in 2013, the subsequent installations *Narrows*, *Insight*, *Vortex* and *Butterfly* and the Baccarat project in 2014.
The focus of *Propagations* was the mathematical progression of sequenced shapes created by a succession of laser-cut aluminium panels. The movements depicted represent the wave-like nature of light.
These installations reveal different volumes depending on perspective and colour; they can be said to be kinetic by virtue of the fact that a holistic view is needed to comprehend them.
The varying colour of LEDs, enhanced by their reflection in the metal, affects the viewer's perception of the entire surrounding space and forms a synergy between shape and light.

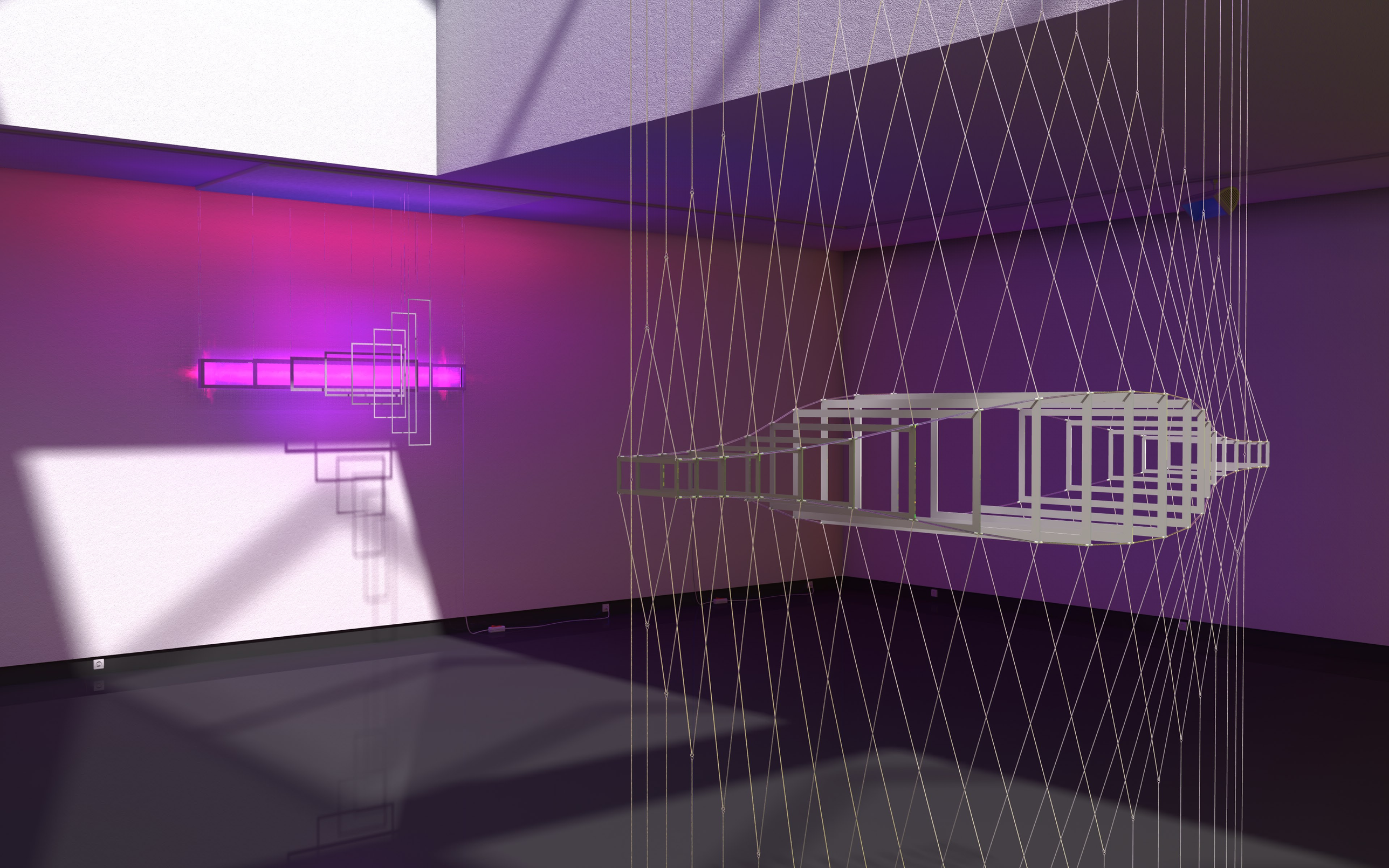
www.bardula.com

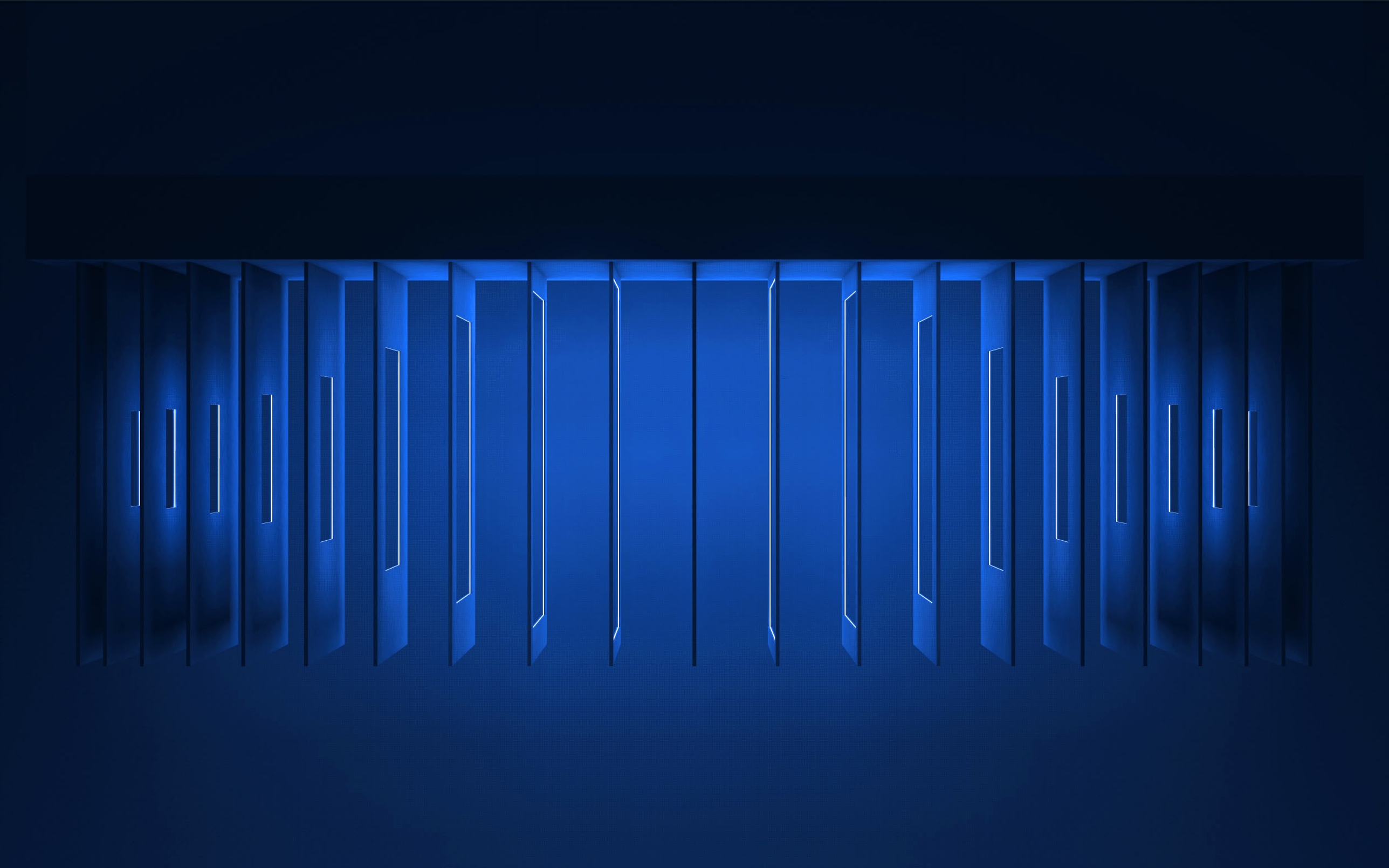

BARDULA for Baccarat
Baccarat Hotel

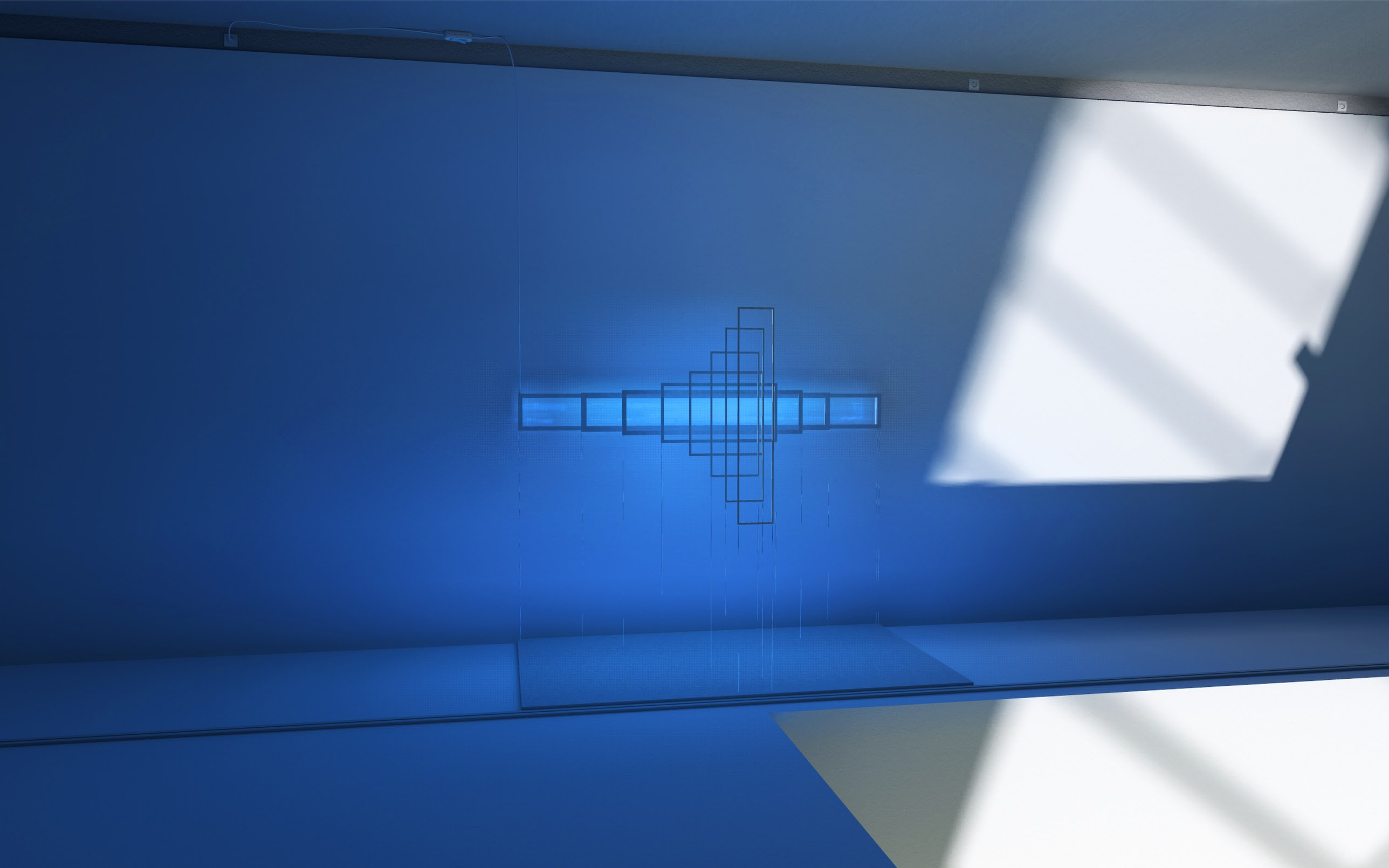
BARDULA
BARDULA for Baccarat
BARDULA for Baccarat
Baccarat Hotel
Le vase Harcourt en vitrines
Projet artistique par Bardula











BARDULA
STUDIO

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