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**MOON VILLAGE ASSOCIATION**

**Cultural Considerations Working Group**

**White Paper #1:**

**Introducing Our Cultural Manifesto**

“There was a startling recognition that the nature of the universe was not as I had been taught… I not only saw the connectedness, I felt it.… I was overwhelmed with the sensation of physically and mentally extending out into the cosmos. I realized that this was a biological response of my brain attempting to reorganize and give meaning to information about the wonderful and awesome processes that I was privileged to view.”

- Edgar Mitchell

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# INTRODUCTION

## The Challenge

The first task of the Cultural Consideration Working Group was to determine and articulate its mandate. Perhaps not surprisingly, this proved quite challenging as the Working Group embraces a membership with deeply differing views regarding the meaning and definition of culture, the relationship between commercial, artistic and purely scientific activity on the Moon, and fundamentally, the difference between what the role and impact of culture ***is***, and what the role and impact of culture ***should be.***

We agreed that our remit was to focus on the intangible rather than the tangible, e.g., the benefits that will accrue to Earthlings as a result of the technological advancements made in our exploration of space. However, the concept of intangibility is in and of itself an elusive precept. Thus, we are focused on what we could do, rather than what we could describe.

## Our Mandate

Ultimately, it was agreed that the mandate of the Cultural Consideration Working Group is to catalyze and promote a positive transformation of humanity's general cultural consensus around the development of a permanent human presence on the Moon.

In short, the role and responsibility of this Working Group is not simply to understand the cultural impact of a Moon Village. It is the remit of this Working Group to steer the cultural impact in a positive direction.

## This Cultural Manifesto

This first in a series of White Papers lays out the cultural manifesto of the Moon Village Association.

* Part II extols the terrestrial cultural benefits of a growing human presence in space by virtue of the Overview Effect.
* Part III introduces the concept of *Greater Earth,* and starts to explore our understanding of the human relationship with space.
* Part IV continues that exploration and considers a paradigm shift in the way we describe our place in the Cosmos.
* Part V looks deeply into the role of the Moon in our creative culture and helps to understand what we can harness from existing culture to promote positive the cultural impact of a Moon Village. It is recognized that this Part relies heavily on Western ideals, and among the recommendations put forth is the need to delve more broadly into the human understanding.
* Part VI reveals the culture that we have already taken with us to the Moon and considers the benefits of a concept of universal heritage and the preservation of that heritage as a human imperative.
* Part VII considers the relationship between culture and nature.
* And Part VIII takes on the ambitious task of reshaping human understanding of the Moon as our cosmic neighbor, to the Moon as our cosmic gateway – a passage to a greater understanding of ourselves and a stepping stone to more extended exploration of and beyond our Solar System.

Review of this Manifesto should provide all Moon Village Association members the information needed to articulate the cultural benefits of a permanent Moon Village that transcends both technological and spiritual platforms to create an inevitability of human growth and development.

## Summary of Recommended Actions:

As noted, the very concept of culture is as broad as it is diverse. We recommend the following actions to steer the cultural impact of a Moon Village in a positive direction:

1. Outreach: identify and partner with organizations that bring more depth to our understanding of culture, specifically in respect of indigenous philosophies.
2. Consider physical and tangible expressions of culture that would both deepen our understanding and raise awareness. For example, placing a camera on the Moon so that everyone on Earth can experience the overview effect in real time.
3. Create sub Working Groups to pursue the topics outlined below to develop detailed white papers on each, while also considering further topics for consideration, including a focus on what cultural impact missions to the far side of the Moon may create.
4. Develop a social media campaign to challenge conceptions and misconceptions about space and space exploration. The Working Group should prepare a social media content calendar that highlights cultural myths and realities about space and the Moon.

# THE OVERVIEW EFFECT

## Background

More than 30 years ago, Frank White used the term “Overview Effect” to describe the new awareness that is born in the psyche after viewing the Earth from orbit or from the Moon. White found that this experience profoundly affects astronauts’ perceptions of themselves, of Earth, and of the future. Fundamentally, the Overview Effect is “seeing the Earth as a whole system without borders or boundaries.” For example:

* Chris Hadfield revealed that his realization came when he wrote “There are six million of us living in Pakistan.” He didn’t write, there are six million people living in Pakistan, he wrote, **of us.**
* Nicole Stott described her moment in this way: “Finally, we were flying over Florida. I wanted to fly to the window and see it, and then realized somewhere down the line that I wasn’t looking at Florida that same way anymore. I still wanted to see Florida, but Florida had just become this special part of home, which is Earth. I don’t know when that happened. Was that two days after I got there? I mean, it wasn’t like one day I woke up and was like, ‘**Oh yeah, Earth’s my home.’”**
* Perhaps Michael Collins captured it best when he explained: “**The Earth must become as it appears; blue and white**, not capitalist or communist; blue and white, not rich or poor; blue and white, not envious or envied.”

Human expansion into space will greatly increase the number of individuals who are able to experience or witness the Overview Effect, which will produce incalculable cultural benefits on Earth, not the least of which is a stronger impetus for peace. At the least, permanent human presence on the Moon will serve as a reminder that we are all more alike than we are different.

Interestingly, White’s original concept of the Overview Effect focused on people who lived permanently off of the home planet, settlers who would always see the Earth as a whole system, without borders or boundaries. Lacking space settlers to confirm his hypothesis, he turned to astronauts as proxies.

A human presence on the Moon will offer an opportunity to test the hypothesis more accurately. In addition, it literally removes the boundaries of our horizons. But that is just the beginning.

## Next Step

A sub Working Group to research the possibility of sending a camera to the Moon that can provide a real-time Overview Effect experience.

# INTRODUCING THE MOON AS PART OF THE GREATER EARTH

## The Facts

Earth’s Moon, which has the Latin name *Luna,* is thought to have formed approximately 4.51 billion years ago, not long after Earth. There are several hypotheses for its origin. The most widely accepted explanation, first introduced by the planetary scientists William K. Hartmann and Donald R. Davis in 1975, is that the Moon was formed from debris left over after a giant impact between proto-Earth and a Mars-sized body called Theia, the Titan goddess and mother of Selene, the goddess of the Moon. The impact blasted material into Earth's orbit. This material then accreted into a more spherical body under the influence of its own gravity, forming the Moon.

The Moon is Earth’s only permanent natural satellite, as well as the only celestial body besides Earth to have been visited by humans. It is the fifth largest natural satellite in the solar system, and the largest among planetary satellites relative to the size of the planet that it orbits.

After Jupiter’s satellite Io, it is the second-densest satellite among the moons in the solar system whose densities are known. With a diameter of 3,475 kilometers, compared to the Earth’s 12,742 kilometers, the Moon is 27.3 percent of the size of the Earth. The surface area of the Moon is approximately 38 million square kilometers which can be compared to the continent of Asia, which has a surface area of 44 million square kilometers. The Moon’s gravitational force is about 16.6 percent or one-sixth of the Earth’s gravity.

The Moon is in synchronous rotation with Earth, always showing the same face and, because its orbit is not circular, it is sometimes closer to the Earth than at other times. Its near side is marked by smooth dark volcanic *maria* (Latin for “seas”) that fill the spaces between the bright, rougher ancient crustal *terrae* (“lands”) highlands and the prominent impact craters. It is the second-brightest regularly visible celestial object in Earth’s sky after the sun, as measured by illuminance on Earth’s surface. Its surface is actually dark, although it can appear to be a very bright white with a reflectance just slightly higher than that of worn asphalt.

The Moon’s current orbital distance is about 30 times the diameter of the Earth with its apparent size in the sky almost the same as that of the Sun, resulting in the Moon covering the Sun nearly precisely in total solar eclipse. This matching of apparent visual size will not continue in the far future. The Moon’s linear distance from Earth is currently increasing at a rate of 3.82 ± 0.07 centimeters per year, but this rate is not constant. A new study published in 2019, shows that the Moon is actually shrinking, getting thinner by almost 50 meters over the past several hundred million years, and this is causing wrinkles on its surface as well as moonquakes.

The Moon and the Earth can be viewed as an interdependent system in which the Earth’s gravity keeps the [Moon](https://en.wikipedia.org/wiki/Moon) in orbit at an [average distance](https://en.wikipedia.org/wiki/Lunar_distance_(astronomy)) of 384,403 km. The Moon’s gravitational influence on the Earth produces the ocean tides, earth or body tides, and the slight lengthening of the day. This influence also accounts for the bulge around Earth’s equator. Likewise, the Earth’s gravitational influence causes a similar bulge to the Moon’s equator. The Moon’s 28-day orbit acts as a stabilizing influence on the obliquity of Earth’s spin axis, causing it to be stable for extended geological periods and preventing climatic extremes.

## Is the Moon Responsible for Life?

In earlier times, the Moon was much closer to the Earth and its gravitational influence was much stronger, leading some scientists to believe the Moon played a significant role in the early evolution of life as the enormous tidal forces may have catalyzed reactions within the organic soup of early Earth. This cosmic dance between the Earth and the Moon could then have led to the emergence of life in the oceans and later, the periodic tidal fluctuations may have led to the subsequent development of land creatures as aquatic creatures adapted to brief periods of exposure on dry land. The stabilizing effect of the Moon on the Earth’s tilt within the narrow range of 21.5o and 24.5o lessened the impact of extreme climate changes, enhancing the environment for intelligent life to come into existence. Thus, without the Moon, life and indeed, humanity may never have emerged and evolved on Earth.

## The Concept of Greater Earth

The region outside [Earth's atmosphere](https://en.wikipedia.org/wiki/Atmosphere_of_Earth) and extending out to just beyond the [Moon's orbit](https://en.wikipedia.org/wiki/Orbit_of_the_Moon), including the Earth-Moon [Lagrangian points](https://en.wikipedia.org/wiki/Lagrangian_point), is referred to as cislunar space – a region which contains approximately 95 percent of all space assets. Geolunar space is the region from the Moon to the Earth-Sun [Lagrangian points](https://en.wikipedia.org/wiki/Lagrangian_point), located 1.5 million kilometers outwards where the Earth’s gravitational influence is balanced by that of the Sun. As all celestial bodies of significant concentrated mass exert a field of gravitational attraction around their cores, which extends to the point of tangential intersection with other celestial bodies, this marks the true cosmic boundary of our planet resulting in a sphere with a diameter of three million kilometers which is called *Greater Earth*.

This sphere, which encompasses the Moon, has 13 million times the volume of the physical Earth and through it passes more than 50,000 times the amount of solar energy that is available on the surface of the planet. The Sun’s energy that reaches Earth warms the planet, drives the hydrologic cycle and is the primary source of energy for the climate system, which keeps Earth suitable for life. Thus, the Sun’s energy and its gravitational influence on the Earth and the Moon have created a complex and dynamic interactive system that has allowed for life to emerge and evolve on Earth – *a system that is rare if not unique in the universe, as far as we now know.*

*Earth Systems Science* (ESS), which has many correlations with the *Gaia Hypothesis,* proposed by James Lovelock and co-developed by Lynn Margulis in the 1970s, is a relatively new discipline that considers interactions among the Earth’s spheres --- atmosphere, hydrosphere, cryosphere, geosphere, pedosphere, biosphere and, even, the magnetosphere --- as well as the impact of human societies on these components. Earth systems science brings together researchers across both the natural and social sciences, from fields including ecology, economics, geology, glaciology, meteorology, oceanography, paleontology, sociology, and space science. Earth system science assumes a holistic view of the dynamic interaction between the Earth's spheres and their many constituent subsystems, the resulting organization and time evolution of these systems, and their stability or instability. *Greater Earth* extends the ESS concept by adding an additional sphere extending out to Earth’s true cosmic boundary which, at a point between the Earth and the Sun, is the Lagrange Point 1 (L1). Located here is NASA’s Deep Space Climate Observatory (DSCOVR) and its EPIC (Earth Polychromatic Imaging Camera) which takes a photo of the Earth every two hours - in essence our planet continuously observing itself.

As the 21st century unfolds, humanity finds that it needs more room and more resources to sustain its numbers and to maintain its thirst for further development. The finite planetary resources that contributed to its present state are being irrevocably exhausted to unsustainable levels and their uncontrolled use within the biosphere is resulting in severe ecological consequences. As it is unequipped to occupy and transform a neighboring planet to meet its growing needs, humanity's next logical step will be to discover and inhabit the last reaches of its own planet - to expand its activities to Earth's true boundaries as defined by the laws of physics. Within the boundaries of *Greater Earth* our species will find the necessary room, resources, opportunities and inspiration that it will need to survive and prosper in the current millennium.

Awareness of *Greater Earth* unites the immense potential of space development with the critical terrestrial issues of ecological sustainability, environmental restoration, clean energy generation, global prosperity and international security. Occupying the region of *Greater Earth* including the Moon and geolunar space will contribute to making humanity universally conscious of its responsibility to all life sharing its home planet and of the crucial role of the human species in the evolution of life on Earth and beyond. Embracing the concept of *Greater Earth* as a new perception of our planet may be a viable strategy for merging the environmental and ecological movements with the goals of the space development community.

## Next Step

A sub Working Group to flesh out the concept of *Greater Earth* and prepare a blog post/OpEd directed at the general public to introduce the concept.

# WE ARE NOT GOING TO SPACE. WE ARE THERE ALREADY.

## Space is Not “Out There”

As we have seen, the evolution of planet Earth and life are inextricably linked to our Moon. Our biosphere and our species evolved as our Moon orbited our planet. Recurring geological phenomena, tidal and seasonal patterns and biorhythms are all subject to or have been attributed to lunar orbital motions.

But we need to understand that space is not “out there.” It is us. We are a part of the Cosmos even as we simply exist here on Earth. We need to move away from the concept of “outer space” and embrace the concept of the Cosmos that is all around us and that is, in fact, us.

“Espace” in French, “space” in English, "spazio" in Italian (or “weltraum” in German etymologically close to room in English) all come from the Latin word spatium, most probably derived from the verb patēre, “being open.” Most of our modern culture consider it an empty volumetric space, absolute, euclidean, fully described by mathematical Cartesian coordinates. However, the Russian language distinguishes between volumetric Euclidean space (prostranstvo) and cosmic space (kosmos).

What’s the difference? Nature is only governed by mathematical laws. Humans typically describe themselves and their environments through mathematics, such as a falling stone. And when we dare study nature, we must distance ourselves from it, we must consider ourselves as being outside of it in order to build an “objective knowledge.” It is this objectivity and distance that currently underscores our view of ourselves in space.

However, the cosmos is not accessible to objective knowledge, it is only accessible to the feeling of living beings. And feelings dictate that we are not on the outside looking into space. We are a part of the universe. A part of space.

It is difficult to embrace this concept because we are on Earth and so never see Earth when we look into the Cosmos. But astronauts express this view all the time:

It’s a realization all of the astronauts have, which is that we are a member of the whole human family. It goes beyond even being a citizen of the Earth; you are really a citizen of the *universe.* When you are in orbit, you ask yourself, “Why do people have the differences they have down on Earth?” you see that the Earth is just a small part of a large *universe,* and you have a feeling about it that is hard to describe.

*-- Al Sacco, Jr.* (in *The Overview Effect: Space Exploration and Human Evolution)*

Mae Jamison expressed it this way: “Because I felt that connected. For me, it wasn’t a connection back down to Earth. It was a connection with the rest of the universe. For me, it was about outward versus inward.”

In short, we are not returning to the Moon, we are implementing a natural evolution – one borne in the spiritual recognition of the Moon by our ancestors and built upon through the centuries as we developed the technology to turn the mystery into our future.

Migrating to the Moon is a natural evolution as humanity expands the spheres of civilization around the Earth from the surface to orbit, from orbit to the Moon and beyond.

In short, the Moon Village is the next step in the evolution of our spiritual relationship as part of the Cosmos. We were inspired by the Moon through many centuries. Now we can move beyond the Moon to understand our role within, not outside, the Cosmos.

## Next Step

A sub Working Group to consider how humans can assure that they are responsible Solar System contributors.

# CULTURE ABOUT THE MOON

*This section is introduced with the caveat that this Working Group has only begun to explore culture about the Moon. It is well-recognized that the following exhibits a very narrow viewpoint. We will continue outreach through a subgroup of our Working Group and look forward to incorporating broader perspectives, including Indigenous perceptions and viewpoints.*

## Global Ambassador

The Moon can be understood to be the ultimate global ambassador. Because it orbits our Earth, it is visible from all continents and latitudes, engages the awe and fascination of all Earth’s peoples without reservation, and its dynamic phases attract our attention each and every evening – and sometimes even during the day. Certainly, humans have been entranced and inspired by the Moon throughout our relatively short history.

Our Moon is one of the first objects that our children recognize and name as they train their eyes on our night skies. Though our Sun is the giver of energy and life and dictates daily life around the globe, our Moon is an object that is imprinted on our psyche very early in our lives.

Since the beginning of civilization, the artist and the scientist have been interconnected partners in the task of communicating humanity’s understanding of the nature of the universe. The idea of space exploration began in the mind of the artist and artists have been intimately involved in space exploration from the very beginning. Long before the first rocket penetrated the atmosphere of Earth, artists were making the concept of humanity traveling beyond Earth’s atmosphere and on to other cosmic locations a desired goal. As humanity’s breakout into space is surely one of its most significant achievements and, more importantly, one that is essential to its future well-being, it is no surprise that space exploration is firmly integrated into contemporary culture, especially as we turn our sights on the Moon.

## Literature and Art

From a historical perspective, the first literary description of trips to the Moon, the Sun, and other heavenly destinations was likely the work of Lucian of Samosota (125–180 CE) who anticipated modern science fiction themes. Johann Kepler’s Somnium, written in 1634, is considered to be the first science fiction book about space. Both a scientific treatise on lunar astronomy and a remarkably foresighted science fiction story about a voyage to the Moon, it accurately stated that the Earth’s atmosphere becomes gradually thinner as one travels farther from the planet’s surface. English clergyman John Wilkins wrote several books about trips to the Moon, the most famous being *The Discovery of a World in the Moone* (1638). In it, he outlined the idea that someday people might inhabit our celestial neighbor.

In the mid-nineteenth century, artists De Montant, A. De Neuville, and Emile Bayard created woodcuts to illustrate Jules Verne’s *From the Earth to the Moon* (1865) and its sequel Around the Moon (1870). A few years later, James Nasmyth’s illustrations were the first space landscapes to appear in a non-fiction book. He co-wrote *The Moon: Considered as a Planet*, *a World, and a Satellite* (1874) with James Carpenter. This book not only summed up lunar knowledge at the time but also contained an interesting series of “lunar photographs.”

Because photography was not yet advanced enough to take actual pictures of the Moon, Nasmyth built his own telescope and created plaster models based on his visual observations of the Moon and then photographed the models. Konstantin Tsiolkovsky, the inventor of astronautics and the first to derive the rocket equation, was inspired by Jules Verne and penned his own novel, *On the Moon* (1893).

One of the most recognized paintings in the history of Western culture, “The Starry Night” (1889) is an oil painting by the Dutch post-impressionist painter Vincent Van Gogh. It describes the view from the east-facing window of his asylum room at Saint-Rémy-de-Provence, just before sunrise. The Moon depicted in the painting is stylized, as astronomical records indicate that it actually was waning gibbous at the time Van Gogh painted the picture, and even if the phase of the Moon had been its waning crescent at the time, Van Gogh's Moon would not have been astronomically correct but may have reflected his belief in an afterlife in the stars or planets.

Since then, numerous works of science fiction in both literature and cinema have used the Moon as a setting.

* H.G. Wells’ *First Men in the Moon* (1901) Philip K. Dick’s *The Man in the High Castle* (1962) and Stanislaw Lem’s *Peace on Earth* (1987) depict the Moon as deeply entangled in complex political agendas.
* Robert Heinlein’s *Rocket Ship Galileo* (1947) is about three teenagers who land on the Moon and claim it on behalf of the United Nations but then discover a Nazi settlement and end up in a battle.
* Heinlein’s novella *The Man Who Sold the Moon* (1950) is about a businessman who is determined to personally reach and control the Moon, which perhaps presages the current interest in developing the Moon by a number of wealthy entrepreneurs.
* Arthur C. Clarke’s *The Exploration of Space* (1951) outlined an expansive vision of the future, including rockets into Earth orbit, trips to the Moon, and voyages to the planets.
* *Earthlight* (1955), Clarke’s first novel with a lunar setting, depicted the Moon as a desolate but beautiful landscape which was bathed in the warmth and blue light of the Earth, a setting that anticipated the famous Earthrise photo of Apollo 8, and portrayed the Moon as an area of potential confrontation among future global powers.
* This theme has been taken up by author Ben Bova, who has dedicated a number of his books, including *Moonrise* (1996), to describing a breakaway lunar settlement that strives to become a sustainable political entity on the Moon and *Moonwar* (1998) which depicts the lunar settlement in a constant ideological and political conflict with planet Earth that results in war.
* In Bill White’s *Platinum Moon* (2010), a global entrepreneur rejects the notion that space exploration should be left to governments and creates a corporation to prospect for lunar platinum, which is needed for fuel cells that will help mitigate global warming.

There is no doubt that the spaceart of the first part of the 20th century, together with the rapid increase of scientifically plausible, or “hard” science fiction literature, played an important role in preparing the public to accept---and financially support---the exploration of space. Among those early space artists, two stand out distinctly.

The first of these was American Chesley Bonestell (1888-1986), artist, amateur astronomer, and an architect who worked on the Chrysler Building, the Golden Gate Bridge, and became a special-effects matte artist in Hollywood. Bonestell is sometimes called the “Father of Modern Space Art” because he illustrated the covers of science fiction magazines (primarily "The Magazine of Fantasy & Science Fiction") and numerous book covers. Scientists invited him to illustrate their concepts of space flight and the terrain of planets. Sometimes reality didn't match the austere beauty imagined by Bonestell (e.g. the Moon). He is undoubtedly the best known and most influential of the space artists associated with the earliest steps of space exploration. He not only depicted scenery on the Moon and planets, but also very often incorporated the practical aspects of exploration by showing the spacecraft and equipment necessary for that purpose. A documentary film: *Chesley Bonestell:* *A Brush With The Future* was released in 2018.

Another influential artist, Ludek Pesek (1919 – 1999), came across a copy of *Sur Les Autres Mondes* (1937) by Lucien Rudaux as a young man in his native Czechoslovakia, and was deeply impressed by that work. His paintings anticipated how the lunar landscape might look in a series entitled *The Planets of the Solar System* (1963), which was exhibited publicly and later published internationally. Not only were his accurate depictions of the Solar System highly acclaimed, his cosmic surreal and poetic visions of life spreading throughout the cosmos inspired later artists.

## Cinema

Cinematic productions about space are among the most successful artworks of all time in terms of audience size, popularity, and financial return and as such they have played a major role in stimulating and maintaining the public’s ongoing interest in space exploration. A number of these productions have focused on the Moon.

* *A Trip to the Moon* (1902) is a French silent film directed by Georges Méliès that was likely inspired by Jules Verne’s work. The film follows a group of astronomers who travel to the Moon in a cannon-propelled capsule, explore the Moon's surface, escape from an underground group of Selenites, and return with a splashdown to Earth with a captive Selenite.
* *Destination Moon* (1950) was the first major science fiction film to deal with the dangers inherent in human space travel and the possible difficulties of landing on and safely returning from our only natural satellite.
* *First Men in the Moon* (1964) is a British science fiction film directed by Nathan Juran as an adaptation of H.G. Well’s 1901 book, which finds that the Moon is inhabited by an intelligent extraterrestrial civilization.
* *2001: A Space Odyssey* (1968) was an epic science fiction film directed and produced by Stanley Kubrick. The screenplay was written by Kubrick and Arthur C. Clarke, and was inspired by Clarke’s short story *The Sentinel* (1948), which follows a voyage to Jupiter with the sentient computer HAL after the discovery of a mysterious black monolith on the Moon that affected human evolution. It deals with themes of existentialism, human evolution, technology, artificial intelligence, and the possibility of extraterrestrial life.
* The film *Apollo 13* (1995) depicts astronauts Jim Lovell, Jack Swigert, and Fred Haise aboard Apollo 13 on a mission to implement a third human landing on the Moon. En route, an on-board explosion deprives their spacecraft of most of its oxygen supply and electric power, forcing NASA's flight controllers to abort the Moon landing, and turning the mission into a struggle to get the three astronauts home safely.
* *Moon* (2009) is a film that follows a man who experiences a personal crisis as he nears the end of a three-year solitary stint mining helium-3 on the far side of the Moon.
* *Iron Sky* (2012) is a Finnish-German-Australian comic-science-fiction action film directed by Timo Vuorensola that tells the story of a group of Nazi Germans who, having been defeated in 1945, fled to the Moon, where they built a space fleet with the objective to return in 2018 and conquer Earth.
* *First Man* (2018) is a biographical film drama about Neil Armstrong and the years leading up to Apollo 11.

## Other Artistic Concepts

In 1976, German artist Adolf Luther proposed placing mirrors in lunar orbit that would reflect sunlight in order to illuminate the far side of the Moon. This Moon project, called Festival 2000, was proposed to celebrate the new millennium. This proposed artwork anticipates some later concepts of using the Moon to harness solar energy.

*When Dreams are Born*, a watercolor by Elisabeth Caroll Smith, depicts two young children launching a sailboat in a pond reflecting the Moon in the sky. This was the winning artwork selected by the cosmonaut crew as part of *Ars Ad Astra, the 1st Art Exhibition in Earth Orbit.* which included 20 original artworks sent to the Mir space station in 1995 as part of ESA’s Euromir 95 mission. The crew’s announcement of the winner was communicated during a live transmission that took place as Mir passed over the Euro Space Center in Transinne, Belgium, on November 30, 1995. Smith’s work remained on the Mir while the other 19 artworks were returned to Earth and to the artists.

In 1997, Arthur Woods proposed *EuroMoon Seed* – an artwork from his EarthSeeds project containing biological content that would be integrated into a lunar lander - to scientists working on the European Space Agency’s EuroMoon 2000 mission.

*Earth-Moon-Earth* (2007) a work by Katie Paterson, is a form of radio transmission whereby messages are sent from Earth, reflected off the surface of the Moon, and then received back on Earth. The Moon reflects only part of the information back: some is absorbed by its structures or lost in its craters. For this work, Beethoven’s *Moonlight Sonata* was translated into Morse code and sent to the Moon. Returning to Earth fragmented at the Moon’s surface, this historical composition was then re-translated into a new score, the gaps and absences becoming intervals and rests. The “Moon-altered” piece was then played on an automated grand piano.

In 2009, Daniela de Paulis, in collaboration with the CAMRAS radio amateur association based at Dwingeloo radio telescope in The Netherlands created OPTICKS – a live audio-visual performance during which digital images were transmitted as radio signals to the Moon which were then bounced back to public venues on Earth. *Giant Leap*, an artwork developed by Richard Clar in 2015 in collaboration with de Paulis using her Moonbeam technique, set a recording of Neil Armstrong’s heartbeat to a musical score off the Moon.

In 2013, NASA scientists used a laser to beam a picture of Leonardo da Vinci's *Mona Lisa* to a spacecraft orbiting the Moon—the first laser communication at planetary distances. The team divided the famous da Vinci painting into sections measuring 150 by 200 pixels and then transmitted them via the pulsing of the laser to the orbiter at a data rate of about 300 bits per second.

Art Moon Mars is a program for public engagement, outreach, and space exploration through art with the goal of sending a Moon Gallery—a 10cm encased grid of 100 artworks resulting from an open call to artists—to the Moon in 2022. The project aims to serve as a focal point for ideas and visions of a Moon Village community instigating intrigue, imagination, and inspiration for space exploration. The project is supported by the European Space Agency (ESA) and has been exhibited at the ESTEC Space Expo at Noordwyck, The Netherlands.

In 2011, a touring exhibition organized by the British cultural agency Arts Catalyst combined lunar narratives, fantasies, and futures to reimagine the future of the Moon. The group of participating artists, including Liliane Lijn, Leonid Tishkov, Katie Paterson, Agnes Meyer Brandis, and WE COLONISED THE MOON (Sue Corke and Hagen Betzwieser), Moon Vehicle (Joanna Griffin and ISRO scientist P. Shreekumar) declared a Republic of the Moon comprising a “micro-nation” that provided alternative visions of lunar life.

Museum of the Moon is a current touring artwork by UK artist Luke Jerram. A sphere measuring seven meters in diameter depicting the Moon’s features is based on 120dpi detailed NASA imagery of the lunar surface. At an approximate scale of 1:500,000, each centimeter of the internally lit spherical sculpture represents 5km of the Moon’s surface. The installation is a fusion of lunar imagery, moonlight, and a surround sound composition created by composer Dan Jones.

British artist Antony Gormley has collaborated with the Yale astrophysicist Priyamvada Natarajan to create a virtual reality work called Lunatick, on display in London (2019). The 15-minute immersive experience sees visitors don a virtual-reality (VR) headset to travel from an imagined version of Christmas Island in the Indian Ocean, through the Earth's atmosphere to the Moon, where they can “experience” walking across the lunar surface.

“MOONS” was a group exhibition pondering wonder, worlds, and orbiting mysteries that was held at the Pasadena Art Center from July 20 until December 16, 2018.

A number of Katie Paterson’s works about the Moon have been included in an exhibition with an accompanying book called “A place that exists only in moonlight” at the London Tate Gallery from January 26 to May 6, 2019.

*Fly me to the Moon. The Moon landing: 50 years On* is a major exhibition of space art at the Kunsthaus Zürich. Taking place between April 5 and June 30, 2019 in Zurich, Switzerland, and later from July 20 until November 3, 2019 at the Museum der Moderne in Salzburg, Austria. The exhibition is a journey through the history of artists’ engagement with the Moon, from the Romantic era to the present day. Divided into thematic sections and featuring over 200 artworks, the exhibition focuses on topics such as lunar topography, moonlit night and the Moon’s shadow, ailments associated with the Moon, low gravity, and the Moon as a mass media phenomenon. The exhibition includes two notable facsimiles of artworks sent to the Moon: Forest Meyer’s The Moon Museum and Paul Van Hoeydonk’s *The Fallen Astronaut* (see Part IV).

## Next Step

A sub Working Group to actively engage in outreach, identifying organizations and individuals that will bring more depth to our understanding of culture, specifically in respect of Indigenous philosophies.

# CULTURE ON THE MOON

## What’s There

There are a number of artifacts and artworks that are actually on the Moon as well as a number of art projects that have been proposed or are in their planning stages.

In addition to all the equipment and hardware that humans took or sent to the Moon and used to gather samples or otherwise implement experiments, there are a number of items significant only for their cultural value.

Luna 2, the first human-made object to reach the Moon, included a number of medallions imprinted with the Soviet Union and the year, 1959.

The Apollo 11 astronauts left behind a disc containing messages of peace from more than 70 nations, a golden olive branch, an Apollo 1 mission patch and medals honoring Yuri Gagarin and Vladimir Komarov.

It is rumored that the Apollo 12 crew left behind the Moon Museum—a small ceramic tile with drawings by American artists Robert Rauschenberg, Andy Warhol, Claus Oldenberg, John Chamberlain, Forrest Myers and David Novros.

The Apollo 15 astronauts placed an aluminum sculpture measuring 8.5 cm in height and a plaque onto the dusty surface of a small crater near the lunar rover. Called *The Fallen Astronaut*, it is a small human shaped figurine designed by Belgian artist Paul Van Hoeydonk. It was intended to commemorate those astronauts and cosmonauts who had lost their lives in the furtherance of space exploration. The plaque was designed and made separately by astronaut David Scott. Van Hoeydonck was given a set of design restrictions to which he adhered, namely that the sculpture: 1) was to be both lightweight and sturdy, capable of withstanding the temperature extremes of the Moon; and 2) could not be identifiably male or female, nor of any identifiable ethnic group. The Apollo 15 astronauts and the artist had a mutual agreement that this event would not be commercialized in any way, which resulted in some controversy in subsequent years.

Israel’s spacecraft Beresheet, which crashed into the lunar surface on April 11, 2019 while attempting a soft landing, had as part of its payload, an Arch Mission discs containing all of Wikipedia and other works.

Planned for launch in 2020, Carnegie Mellon University is hoping to send another museum to the Moon aboard a commercial lander developed by Astrobotic. The project, called The MoonArk, is designed as a gift of life and hope to future humans and is configured to cause people to ponder: how the Moon stirs the tides; the growth patterns of life; the rhythms of society, and how the Moon always continues to pull us further into the heavens. Under the leadership of artist Lowry Burgess and with more than 300 artists involved, the MoonArk is a highly collaborative and massively integrated sculpture that poetically sparks wonderment through integrating the arts, humanities, sciences, and technologies.

## Preserving What’s There

There are more than a hundred sites on the Moon with evidence of human activity. The sites contain materials from the European Space Agency, Japan, India, Russia, China, and the United States. Not only do these sites contain ongoing experiments, they hold invaluable data. For example, engineers are hoping to examine these materials to determine how they have fared after continuous exposure to the elevated radiation levels on the Moon. Along with scientific equipment, robotic landers and other objects left behind to lighten the load for the return home, there are a number of memorial and tributary items.

But perhaps most important, these varied objects, and their position on the lunar surface, alone can reveal the true story of humanity’s history on the Moon. A chronicle that celebrates the persistence and passion of hundreds and of thousands of scientists, engineers and aviators throughout human history who have supported the effort to “slip the surly bonds of Earth” and reach the stars.

Here on Earth, the international community identifies important sites by placing them on the World Heritage List, created by a convention signed by 193 nations. In this way, the international community has agreed to protect things like the cave paintings in Lascaux, France and Stonehenge, a ring of standing stones in Wiltshire, England.

There are no equivalent laws or internationally recognized regulations or even principles that protect the Apollo 11 landing site, known as Tranquility Base, or any other sites on the Moon or in space. There is no law against running over the first bootprints imprinted on the moon. Or erasing them. Or carving them out of the Moon’s regolith and selling them to the highest bidder.

For All Moonkind seeks to protect human history in space, not just because we should memorialize humanity’s greatest technological achievements, but because, as Russell Train put it:

the purpose of the World Heritage [is] something more than simply helping to assure protection and quality management for unique natural and cultural sites around the world –as critically important as that goal is. Above and beyond that goal, . . . the programme [is] an opportunity to convey the idea of a common heritage among nations and peoples everywhere! . . . it [is] a compelling idea that can help unite people rather than divide them. . . . it as an idea that can help build a sense of community among people throughout the world.

## Next Steps

Sub Working Group to consider how can the human species be specific about the culture we take to the Moon as a first step into the wider Solar System.

Continue collaboration with For All Moonkind to support protection of heritage in space and on the Moon.

# CULTURE AND NATURE

## Briefly

Culture has a direct physical impact on the landscape, nature, and environmental systems. This will be true of a human lunar presence also and something to be clear on. For example, our cultural actions now can quickly impact non-human entities and life sustaining systems negatively.

## Next Step

Sub Working Group to consider how we can position our culture as something that ensures the life support of all environmental systems, even on the Moon.

# GATEWAY TO THE COSMOS

## Conclusion of Sorts

Now it is time to recognize the Moon as our stepping stone to our future selves, both literally and figuratively.

The Moon Village is committed to diversity and individuality.

The Moon Village is committed to using technology to share the lunar experience with the widest possible Earthbound audience.

The Moon Village is committed to expanding culture on the Moon and concerning the Moon by consulting with artists (architects, novelists, painters, sculptors etc.) to determine which aspects of humanity should be featured in the habitats.

The Moon Village is committed to expanding culture about the Moon and concerning the Moon by catalyzing a paradigm shift from the concepts of “extraterrestrial,” “alien,” and “outer space,” to terminology that better reflects that humanity is not a visitor in space, but a part of the Cosmos itself.

In so doing – and in harnessing the rich cultural history of human fascination with the Moon – it will become clear that “space” is not just about resource utilization, billionaires, science, and exploration. It will become clear that our relationship with the Cosmos is about the improvement of the human condition and the expansion of the humanity in all its dimensions.

## Next Step

Sub Working Group to develop social media campaign and content calendar aimed at raising awareness of cultural considerations in respect of a Moon Village.