

Origins and Art: A Possible Bridge to the Cosmos.

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A collection of some of my thoughts.

Foundations.

Maybe we should look up at the night sky more often. Your body contains lots of atomic elements. Some you may be very familiar with like Carbon and Oxygen. However, there are few which may not come to mind immediately like Iron and Boron. One thing they nearly all have in common though is that they can all be traced back to the life cycles of stars in some manner. So, when I look up to the night sky, I tend to think that the cosmos isn't that far away at all. In fact, it seems it's closer to us than we may think.

"The nitrogen in our DNA, The Calcium in our teeth, the iron in our blood, the carbon in our apple pies were made in the interiors of collapsing stars. We are made of starstuff"

Carl Sagan.

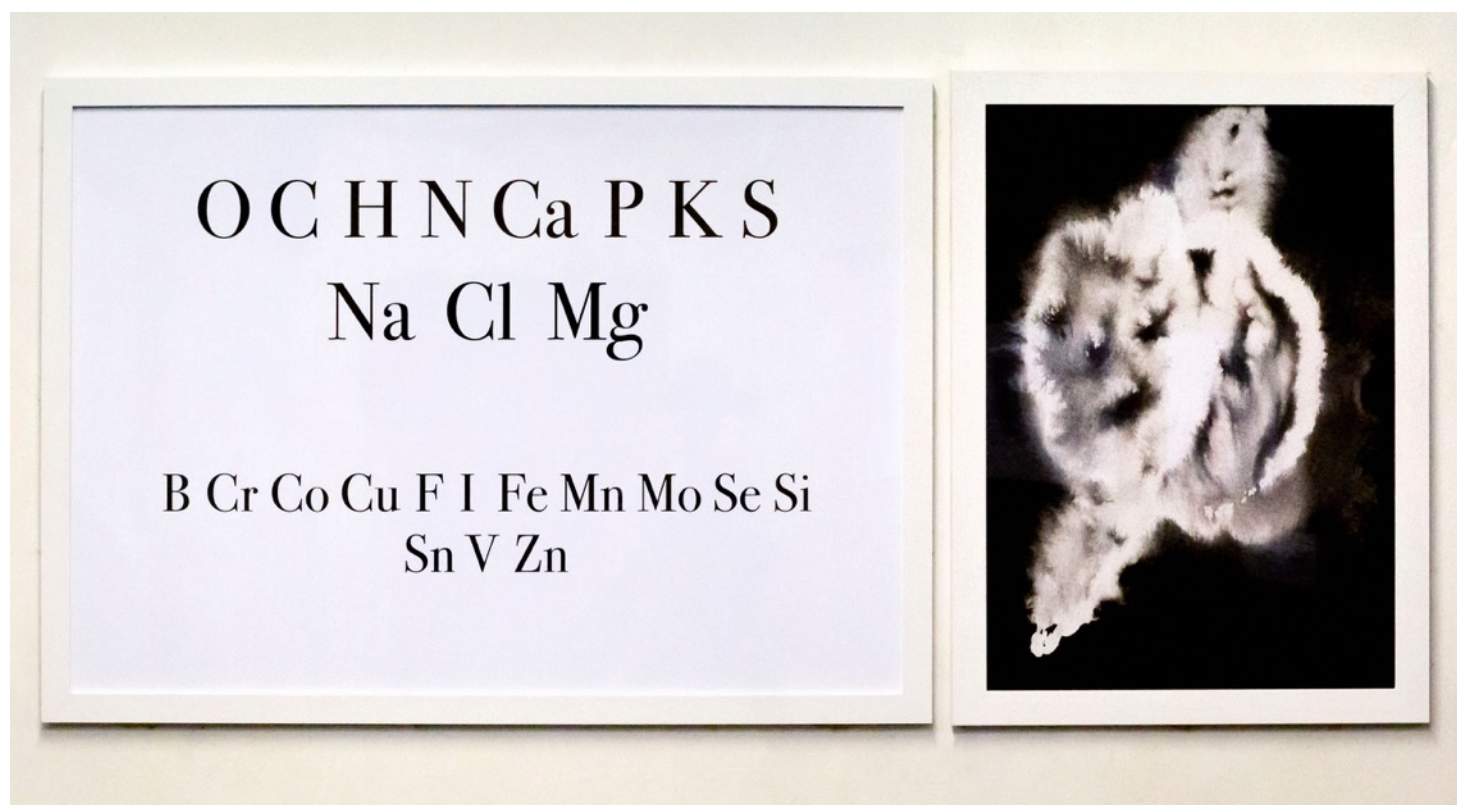
Although we are a product of past events, the cycle doesn't stop with us. One day our sun will run out of fuel and become a planetary nebula. The nebula will eventually disperse and become once again part of the interstellar medium leaving behind a corpse known as a white dwarf. Some of the elements from the nebula will then probably go on to create new stars and the cycle continues. These elements get passed around the cosmos it seems, in particular Hydrogen, the most abundant in the universe, one of the first elements created in the universe and the most common fuel in stars.

For me then it comes as little surprise that a topic of such majesty and scale should be and has been explored deeper not only in the realms of science but also within art. Artists across history (particularly in the 20th Century) have used subjects and ideas that could relate or symbolise something about the cosmos. Building a bridge between us and the cosmos I feel is vital and important when it comes to understanding the links between humanity and nature. In a world consistently dominated by the latest in technology, the links both spiritually and physically between humanity and nature can easily become forgotten or lost altogether.

Ironically however, I've been using technology and new media in order to investigate our links to the cosmos. Our devices have the same links to the cosmos as we do. Some of the metals in this computer I'm using to write these sentences were first forged in the heart of a dying star. A glass of water beside me contains Hydrogen and Oxygen, both of which are present in the hearts of supergiant stars. The carbon in my body that allows me to function through everyday life was also forged within a supergiant. The remains of stars are all around us. The Origins series of artworks takes this approach of disassembling everything into its core atomic elements and thinking about the origins of those elements through the use of Inkjet prints and digital drawings. It felt only fitting to analyse the human body first. For me, nothing feels more like a 'home front' than something concerning our own bodies. However, like my computer full of metals, it's also made of star remains.

'Human' was the resulting work. An investigative work with a format that could be compared to that of a class room white board or the display of evidence relating to a crime scene. Both of which I would take as a compliment. However, what is represented took millions and billions of years across thousands of light years to come together. The work reverses this cycle and traces back these elements to their origin during a supernova. This 'Bridge' has now been formed between the viewer and outer cosmos. Spanning vast amounts of time and light years.

Similar works incorporating the same approach followed involving Salt, Water and even chemical formulas responsible for stimulating emotions, thoughts and feelings leading to what perceive as love. So, for us to experience love, a star had to experience death.



'Human'. 2018. Inkjet prints on Paper. 624mm x 871mm & 450mm x 624mm.



'Love'. 2019. Inkjet Prints on Paper. 624mm x 871mm & 450mm x 624mm.

Bridging the Distance

Art allows the exploration of a place and space which we may not previously have been able to explore so easily. We can observe the cosmos in great detail from our pebble orbiting around a sun that could be described as insignificant when compared to the expanse of the universe. However, in terms of going to explore the place where the foundations of our bodies were made, it still seems we are a few centuries away from being able to do so. So, can art, which may appear to not have any boundaries and if it does increasingly push against them, be able to explore such a vast unknown and navigate areas of the cosmos which up close are currently unknown to us?

In a recently published book about the Anthony Gormley exhibition at the Royal Academy of Arts, London, Professor Priyamvada Natarajan of Yale University wrote a body of writing within the exhibition catalogue. Within Natarajan talks about how Anthony's selection of material is deeply connected to the earth's core and its origins elsewhere in the universe. Along with this, she also talks about how as a species have come a long way in being able to map and observe the most mysterious forces in the universe. One of my favourite quotes from this body of writing however may be able to offer some insight and possibly answer the question in the previous paragraph.

".. And there is a surprising alignment of aspirations in our work; we are searching to comprehend and imaginatively inhabit our conceptions of the cosmos, whether we are using poetry, mathematics or sculpture."

Priyamvada Natarajan. 'Unravelling the Invisible Universe: Colourless, Soundless, Odourless and Painless but Real'.

For me this encompasses how art and observations of the cosmos can work together to achieve a common goal. Our observations can provide information that helps art visualise a position or a visual we are struggling to view ourselves. Thereby possibly breaking down boundaries between our us and our understanding of that which remains unknown.

However, it can also provide an insight into the forces which currently remain out of reach. We've seen supernovae up close before. In 1987, a supernova occurred within a satellite galaxy of our own milky way galaxy; the Large Magellanic Cloud conveniently named SN-1987a. 1987a was the closest supernova observed since Keplars Supernova in 1604 (SN-1604). As a result, we were able to observe in great detail the effects of a core collapse supernova.

Photographs and data from observations it seems then are the closest we can get to these dying giants. However, can art bridge the gap further? Can we be brought closer through our connections with the atomic elements? These questions we're circling my thoughts for some time and we're almost entirely the basis for the Carbon Drawings.

The Carbon Drawings

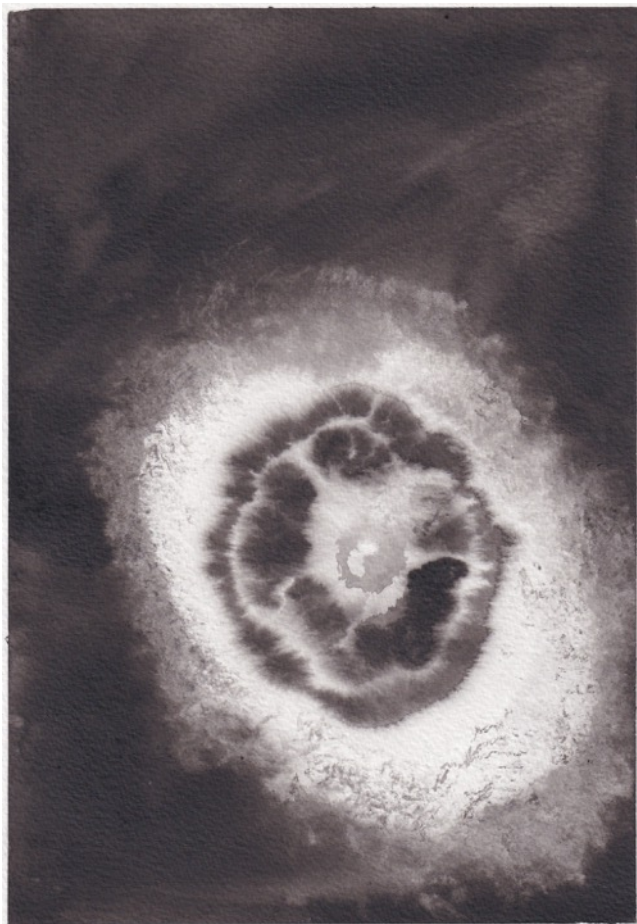
In Star Trek: The Motion Picture upon encounter with a mysterious alien entity called 'V'ger', that the crew of the enterprise are referred to as 'Carbon based units'. Looking a little confused a security officer asks in one encounter with a probe from V'ger 'Carbon based units?' to which Leonard McCoy responds 'Humans. Ensign Perez. Us'. While there is some truth to it (Oxygen though being the most abundant in the human body) carbon is the second most abundant in our bodies and essential to life. It is the main element of components in the body such as sugars, DNA and muscle tissue as well as many others. To put it short, life as we know it on planet earth could not exist without carbon.

The carbon atom contains 6 electrons, 6 protons and 6 neutrons and belongs to group 14 of the periodic table. It's the 15th most abundant element on earth and by the mass the 4th Most abundant in the Universe behind Hydrogen, Helium and Oxygen. Carbon atoms can bond in together in a few different ways. These are called Allotropes and a few elements have the ability to do this. To put it simply, it's when an element can exist in two or more physical forms within the same physical state (such as a solid). Carbon has quite a few allotropes. Two of the most well-known would be Diamond and Graphite.

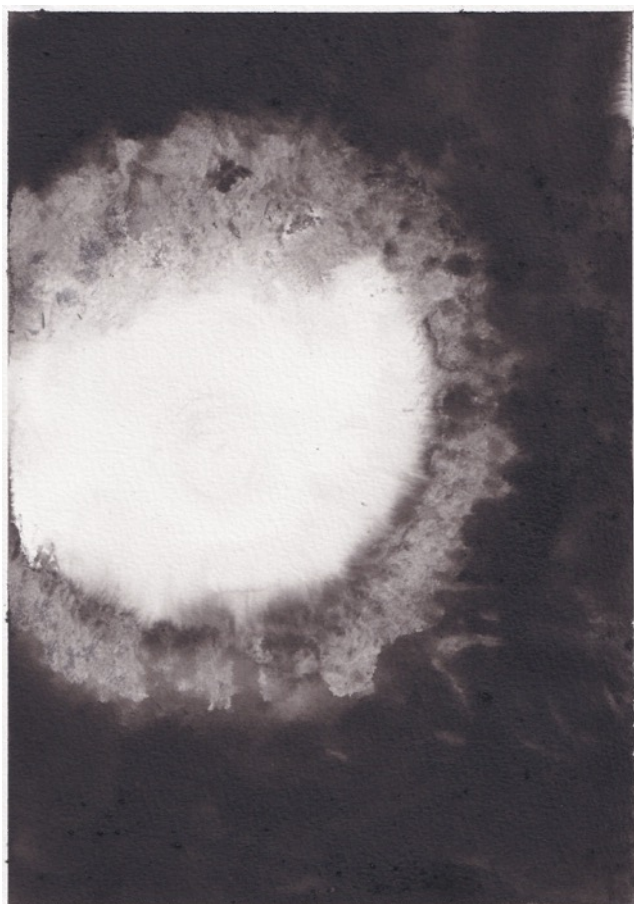
The origins of carbon can be traced all the way back to the giant furnaces that populate the cosmos. Stars many times the mass of our sun are able to fuse heavy elements during their lifetime within their cores. After a supernova and being blasted into space, the carbon then disperses within the interstellar medium along with all the other materials which will go on to form new stars like our own sun and solar system.

These drawings are created using the remnants of dead stars. Incorporating a range of materials containing atomic elements that trace back to the hearts of star during their life and death they serve as a monument to these fallen giants with carbon being the richest element within the drawings. Incorporating a range of drawing materials like Ink, Graphite and Charcoal. Applied rapidly, Ink expands and disperses within the soaked paper with the rich element filled ink recreating the moment of death for a supergiant star. The drawings break down distance and time to echo the moments where death and the seeds of life meet. Bridging the vast distances between us and these galactic furnaces to reaffirm that we are not just part of the cosmos but are actively part of it. The carbon atoms in these drawings, the carbon atoms in your body, the carbon in our machines and the carbon in all other living beings can be traced back to stars the lived light years above your heads.

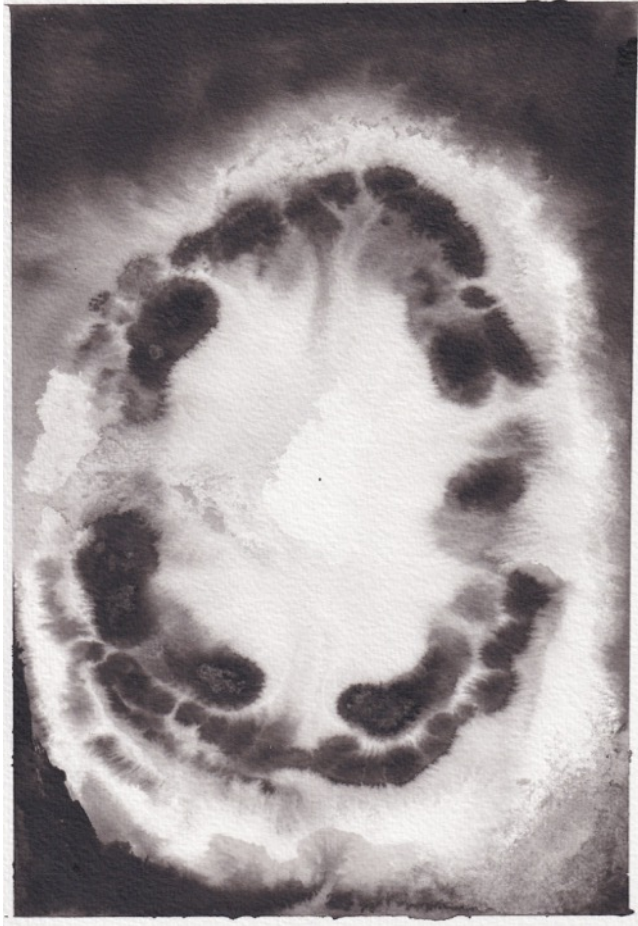
Gaining an understanding of our origins and our place within the universe is at the centre of the work. Answering questions such as how we were made? and where did everything come from? In short, we're made of stardust. In a world where we seem to dominate our planet with infrastructure and advances in technology, it becomes more important to remember that we're it not for these forces thousands of light years away, we would not exist. We can use the earth's metals to build all we like on the surface of our planet. However, a star had to make it first.



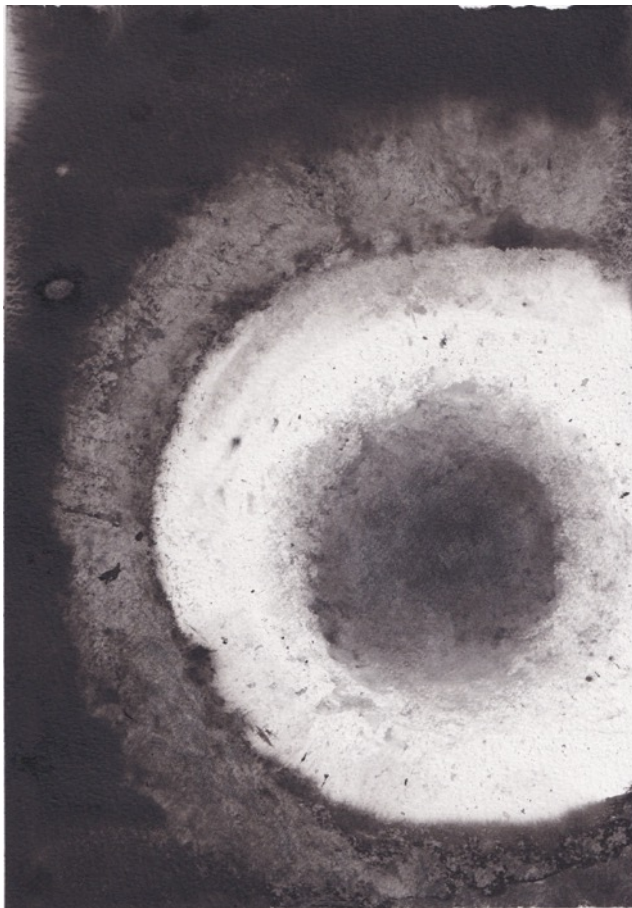
Supernova VIII.
2020.
Ink on Paper.
254 x 177mm



Supernova II.
2020.
Ink on Paper.
254 x 177mm



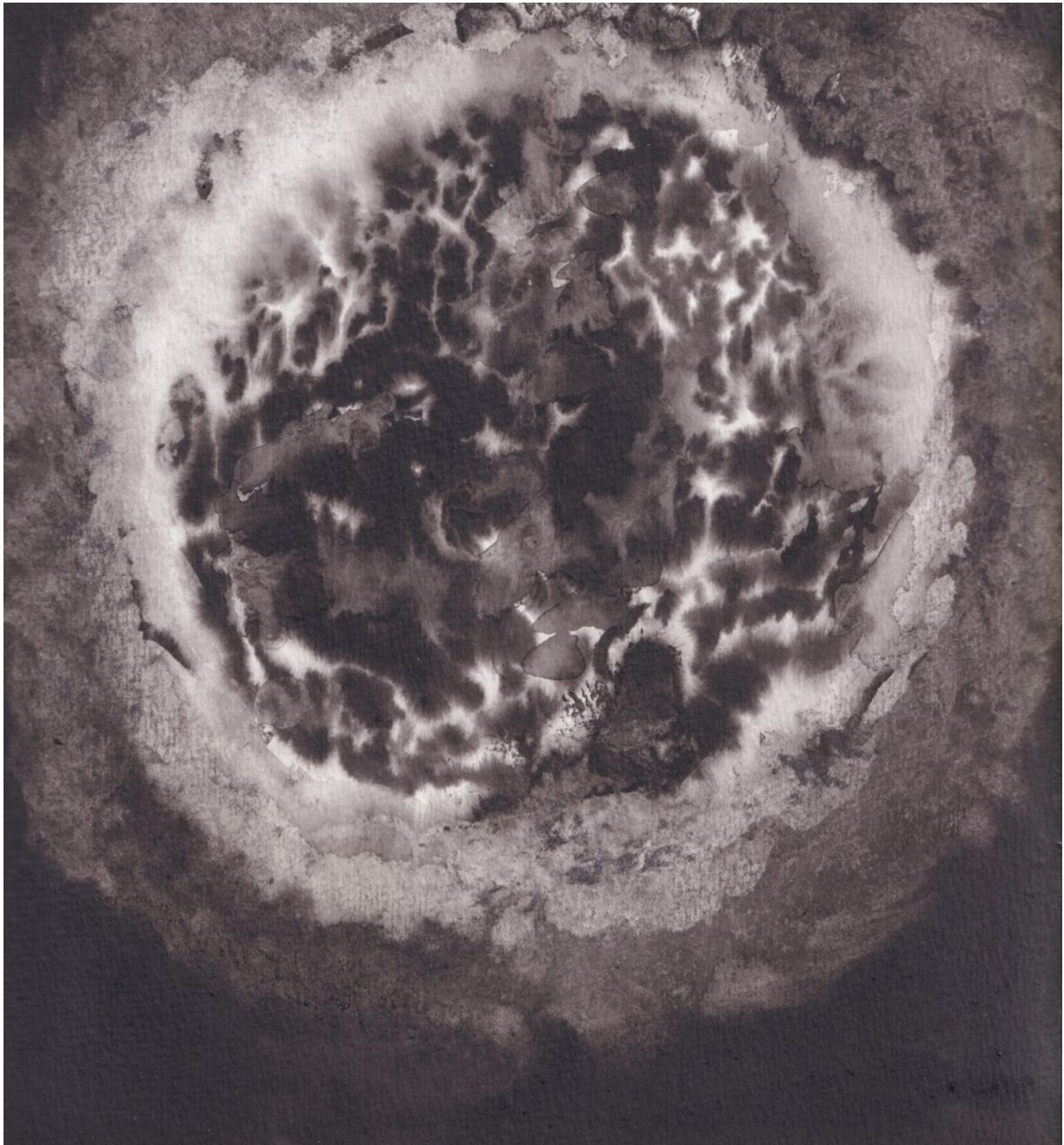
Supernova IV.
2020.
Ink on Paper.
254 x 177mm



Forge.
2020.
Ink on Paper.
254 x 177mm



(left) Supernova X.
2020.
Ink on Paper.
210 x 297mm



(Above) Supergiant.
2020.
Ink on Paper.
248 x 248mm

Closer to Home.

You don't have to look far out into the cosmos to see a powerful star. Wait a few hours till early morning and the light of star will begin to creep over the horizon. Basking us in warmth and light and allowing us to see more clearly. Our Sun.

The Sun is a Star.

It's still quite an insightful statement. That circular ball of light which rises and sets every day, which our dear little planet and all the other planets in our solar system orbits around is indeed a star. Stars may seem far away as twinkling little lights against a bed of blackness. However, one is our dear neighbour.

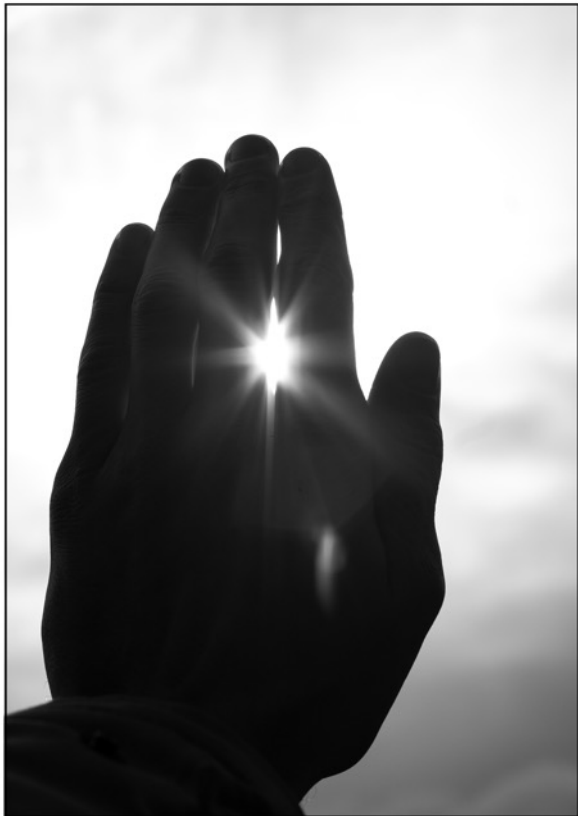
Its importance is well known. Heat & Light essential to life. Every second the sun produces the same amount of energy as roughly 400 million 1 megaton nuclear bombs being detonated at once, every second. Put another way that's millions of times the entire nuclear arsenal on our planet every second. To say it's powerful is an understatement. Think about it, the sun is around 93 million miles away, yet you can still feel the heat on your skin on a clear day. Nourishing our planet which sits in the goldilocks zone of our solar system. Not too cold so our oceans would freeze & not too hot, so they would boil away. It takes light, which travels at 186,000 miles every second, just over 8 minutes to reach our planet. However, when it's around 2 meters from the ground, some of those photons of light are stopped.

'Intervention' investigates the distance that light has travelled in just over the 8-minute journey from the surface of the sun to the near surface of our planet. By raising your hand and blocking to light, an intervention is in effect. The photons are stopped from reaching the ground. Re-establishing a link between the intimate relationship between us and our sun becomes apparent and how we could be seen as taking this light for granted.

Everyday billions of people walk across our planet whilst the light coming from our sun streams down into our atmosphere, basking us in warmth, nourishing life and giving us the ability to use our eyes. Yet the photons that have travelled around 93 million miles have been denied from hitting the ground by the human figure casting a shadow on the ground. 'Intervention' presents the viewer with a question of the space we inhabit and where we belong with this simple act of denial towards subatomic particles. Are we stealing the nourishment from our sun? In the same way as we take fuel from below the surface of our planet to power our machines?

"Like the air we breathe, we take light for granted"

Lynn M. Herbert. "Spirit and Light and the Immensity within." 1998.



Roughly 92,955,869 miles in
just over 8 minutes.

Some of it stopped just over 2
meters from the ground by my
hand.

‘Intervention’. 2019. Inkjet Prints on Paper. 47cm W x 64.4cm H & 47cmW x 64.4cm H.



‘Arrival’. 2019. Photograph Inkjet Print on Paper. 47cm W x 64.4cm H.

Into the Garden of lights in the Night.

Moving away from our sun to its neighbours and the billions beyond. Our solar system resides in Orion – Cygnus arm of the milky way galaxy about two thirds away the galaxy centre and one third away from the edge of the milky way. Our galaxy is about 100,000 light years in diameter. That's a lot of room to populate with stars. 200 billion is a good estimate although newer studies are putting the number between 200 and 400 billion. Our galaxy however is tiny compared to some of the giants that roam the void. The elliptical galaxy M87 for example 54 million light years away is thought to contain several trillion stars. With all of these stars, the result must seem like a garden of lights against a seemingly infinite empty void of black empty space.

It would be interesting to stand on a rocky rouge planet and look up at this garden. Rouge planets are planets of various sizes that have been ejected from their solar systems. This can happen in a few different scenarios, the gravity of a larger planet moving towards it's home star can effectively kick out smaller planets into space. These planets then wonder alone for possibly millions of years between stars. As a result, they receive no warmth and light and will be very cold and frozen. However, the view would be incredible. A garden of lights in full view.

All of these stars can be difficult to comprehend sometimes. Even the number of stars within of galaxy can be difficult to digest. Thinking about the number of stars can almost stretch to infinite-like quantities. Is there a way that these quantities can be condescended down? Possibly.

In his 1790 book '*Critique of Judgement*', the Philosopher Immanuel Kant notes two forms of the sublime. In art, the sublime can be used to describe something's greatness, whether that be physical, spiritual, within its power or in an aesthetical way. Kant states in '*Critique of Judgement*' that there is the mathematical sublime and the dynamical sublime. The mathematical sublime in this instance could be used to describe the difficulties we may face when trying to comprehend the cosmos. The number of stars in our galaxy let alone our universe seem to reach infinite numbers in quantity. Therefore, they could fall into Kant's mathematical sublime, where something within nature reaches the grandness of the sublime but through quantity. This could apply to even the smallest things within nature. The amount of grains on a sandy beach. The amount of leaves in a forest.

With 200 – 400 billion stars in just our galaxy, when I think about the universe's total population of stars, the notion of how small we are as a species for me becomes reality. It really is a big garden out there in the night, but it's not entirely empty.

However, despite there being possibly more stars than all grains of sand on earth, the universe is still 99.9999999% empty.

(right) 'Starfield 21'. 2019. Digital Drawing.



*This paper contains mostly Carbon, Hydrogen & Oxygen.
All can be traced back to the heart of a dying supergiant star.*

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