Of Great Magnitudes and Multiplicities

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Dear R—

I'm sorry to inform you of the death of the star ASASSN-16cs.

Yours sincerely,

K—

A deep-space telescope observes a cataclysmic event millions of light years away and hundreds of thousands of years in the past. An electronic telegram is composed and sent out by mail server. The artist translates this into a letter of condolence and posts it first class at the earliest possible moment. In the beginning these events were manageably infrequent, but as technology continually improves, it is becoming difficult to stay on top of the flow of information. But a promise is a promise…

Katie Paterson's *The Dying Star Letters* collapse death, distance and incomprehensibility into the sort of message that produces a plot turn in cinema. The language used is bureaucratically terse, the word 'sorry' unconvincingly mimicking sympathy. The victims of the universe's mysterious forces are identified but, by dint of their occult combinations of letters and numbers, remain anonymous, data-like. The letters' recipients are inundated by sad news that does not really touch them. And yet someone has looked long and deep into the night to discover these stars, and many continue to monitor the electromagnetic events that signal their death. Paterson is tapping into a curious network of attention and detachment.

Gamma ray bursts (GRBs) are super-explosive events observed in distant galaxies that can last seconds or hours, and burn with an intensity measurable in relation to our own sun – some burning as brightly as 100 billions suns. Paterson takes this extreme brightness as the title for a piece that represents GRBs by colour-matching individual circles of paper to the numerical value of their brightness – some 3216 in total. At the start of the exhibition, these are released en masse by a confetti canon in the gallery, the awesome energies of the universe combined and contained by a more human-scaled bang, and converted into chaotic whorls of paper that respond to gravity, air currents and the presence of gallerygoers.

The bathos of *100 Billion Suns* and *The Dying Star Letters* is marked. As symbolic acts, they inevitably fall short of our emotions. But this shortfall of expression, this incommunicable excess, becomes the silent subject of the works. Perhaps it is because the historical and cultural narratives ascribed to heavenly, inter-galactic and infinite times and places are as varied as the human imagination that Paterson chooses to invoke them through scientific representations. Rather than Greek, Pagan or science-fictional myths of gods and forces, it is technology and data that are her conceptual and aesthetic materials. While not many of us can profess to understand astronomical findings, their metaphorical and actual implications are immediately palpable: huge temporal and spatial quantities diminish the historical and geographic scope of the human, while the level of specialist knowledge involved is enough to weaken the layperson's claim to understand much at all. But estrangement is not Paterson's aim. Her practice acknowledges human aspirations implicit in technologies, and draws the otherworldly within the compass of the individual. In *Ara*, for instance, each of the one hundred and one lights represents a star in the constellation, the comparative brightness of each scaled down to that of the LED lamps. Ara, the Ptolemaic constellation identified in Greek mythology as the altar of the Gods, is domesticated as a festoon of bulbs – still above our heads, but so much more within reach.

And then *History of Darkness* invites us to hold in our hands the expanses that exist between stars. Two thousand 35mm photographic slides (just one quarter of the collection to date) of areas of darkness throughout the universe have been labelled with their respective distance from Earth – between 100,000 and 13 billion light years – demonstrating that darkness is not simply the absence of light, but a particular condition. Before the scientific revolution and subsequent technological innovations, the vastness of the universe was a singular other, an elsewhere. Now it is conceived of as a multitude of interrelated points with particular properties that precipitate and participate in observable events. The other-worldly can be described in terms of volume, distance, heat intensity, speed, acceleration, density of mass and so on, albeit at values that the average brain cannot grasp. This abstraction of the sensory or experiential into informational coordinates is a cardinal operation of modernity: mapping, charting, timetabling and enumerating are the means of categorising, measuring or surveying. And once an animal, a society or the global weather system is empirically interpreted, an illusion can be formed of knowledge, or

even control over it. Paterson, however, diverts these technical methods towards aesthetic and poetic effects, foregrounding not knowledge as such, but that which is felt but not understood, known but not sensible, shown but not comprehendible.

So much technological endeavour has been dedicated to expanding the extent of the universe that humans can see. From subatomic particles to the further reaches of the universe, looking has been the first step towards understanding. *All the Dead Stars* documents the locations of observed and recorded dead stars – almost 27,000. The registers of our reflection on this field of dots is three-fold: in the gallery there occurs a physical encounter between body and object; in a global context we can envisage the eyes that have glimpsed these technologically mediated events; and we can imagine, from the viewpoint of the stars, looking back on ourselves as a similarly tiny, anonymous dot in the overall scheme of things. *Totality*, meanwhile, scatters approximately 10,000 images of solar eclipses about the gallery in a discotheque of the sublime. The images depict almost every eclipse that has occurred since records began, and have been collected from all quarters of the globe, most from photographic sources, although there are some drawings from before the invention of photography. The eclipse sits at the cusp of the mythical and the anomalous, since its frequency is low enough to make it an important phenomenon, but high enough that most of us will have lived through one. And we will have seen it in a photograph, if we have not witnessed it directly. It marks a point at which awe and understanding can overlap. And the mirror ball, too, could be thought of as occupying an equivalent place in our consciousness. It is not an object many of us have about the home, but it is one we have likely encountered when the working week escapes into the weekend, when the everyday is eclipsed by the special.

Until surprisingly late in the twentieth century, photography was considered an objective technology, which, like science in general, purportedly represents the world as it really is. But it has now come to be appreciated that experience will always exceed any description, and that representation is ultimately subjective. The proposition of abstract time, for instance, as a steady flow of minutes, hours, days and years does not tally with the personal experience of the drag of boredom, or of a month, a year or a whole lifetime having whizzed past in retrospect. Philosophical models of time are manifold and difficult, and even the abstracted time of the clock and the calendar (more Enlightenment tools of control) is not straightforward, as

Paterson demonstrates in *Timepieces (Solar System)*. Here, each clock represents the number of hours that must pass before each planet in our solar system experiences a full day – that is, one full rotation of the planet equates to two revolutions of the clock face. Setting us up for a comic double-take, at first glance each clock looks as it should; but only the Earth clock takes 12 hours to circumnavigate. The clock for Saturn performs one round of the face every five and a half hours, Jupiter every five, while Mars needs only a small adjustment of the Earth clock, for it is just 20 minutes out, and Neptune requires an extra ten minutes. What is more, these durations change, depending on the particular ellipsis of the planet, which is subject to changes in the gravitational pull of other planets, the proximity of which depends on their own elliptical orbit. And so the piece must be recalibrated for each exhibition to take into account the emergent behaviours of each planet among the complex forces of the solar system. Like the international business that boasts offices in New York, London and Paris, the implication is of a range of diurnal experiences, of entities on other planets with very, or just slightly, different rhythms – which contributes to what makes them alien. Through these means Paterson addresses representation as a political process, reminding us of the contingency of that which comes to be called 'normal'.

Operating counter to *Timepieces*, making the strange familiar, and in a register that is not visible to the naked eye, *Campo del Cielo, Field of the Sky* performs a process of 'normalisation', with disquieting connotations. Paterson melted down a meteorite and recast it in a mould taken from its own form, essentially using it as raw material to make a model of itself. When it first fell, the meteorite was made up of recognisable elements and compounds, but in configurations never found on earth. On melting and re-solidifying, the molecules reformed into their common terrestrial arrangements. While the eventual cast looks identical to the original meteorite, it is profoundly, yet invisibly, different. It has been naturalised, by Earth standards. Paterson repeated this process with several meteorites, and sent a small one (so as not to cut into the astronauts' rations) back up into space in an automated transport vehicle (ATV), by the European Space Agency, which delivers supplies to the International Space Station. It was then deposited back in the ATV and sent back towards earth, burning up on re-entry into the atmosphere. The meteorites's journey was started over, and given a very different ending.

Wilful destruction is implicit in Paterson's concern for the environment and her recognition of the need for governments, industry and individuals to adopt responsible behaviour and attitudes to ecology. Following an extended stay in Iceland, she persuaded Virgin Media to provide her with a telephone, which she submerged in Vatnajökull, the largest ice cap in Iceland, and which is melting under the pressures of climate change. Back in London, a neon telephone number prompted gallery-goers to call up and listen live to the gurgles and drips of the receding ice. Then, for *Langjökull*, *Snæfellsjökull*, *Solheimajökull*, the sounds of three glaciers were recorded, and bottles of their meltwater frozen into moulds of a record pressed with the audio. Together, the three videos make a cacophony of the musical gurgles, drips and gushes of the melting glaciers, and the rasps and skids of the needle on the ice of the records themselves. It is a perfect instance of meta-description, where the means of playback reproduces the narrative of that which it represents: all is turning from sense to mess.

Ecological urgency has also compelled Paterson's establishment of *Future Library*. A forest has been planted to serve as the source of paper for a literary anthology to be printed in one hundred years' time – the implication being that thinking literally about the materials one uses is the only responsible way to act when complex and occluded networks of production and distribution make it impossible to tell the real impact of one's consumption. The trees have been planted within an existing forest in the environs of Oslo, its future secured by a forestry commission and a board of trustees. And as the trees grow, so will the Deichmanske library in Bjørvika in Oslo, with an archive box, containing a manuscript contributed by an invited writer, added each year. So far just Margaret Atwood's box sits awaiting its future audience. David Mitchell is currently working on his contribution, and the trustees meet regularly to discuss who should be invited year on year. No one, not even Paterson, is allowed to open the archive boxes and read the manuscripts. Only when the anthology is published in 2114 will any eyes other than the authors' fall on the texts. In the meantime, certificates that entitle its owner to a copy are being released – a few each year, until the whole print run of 1000 is spoken for. But these certificates are assets that, unlike company shares or stocks, cannot be 'cashed-in' early. They are heirlooms, tokens of value and conduits of anticipation to be passed on down the generations.

This is not the first time that Paterson has used a cultural artefact as an instrument for gauging the impact of time. For *Earth–Moon–Earth (Moonlight Sonata Reflected from the Surface of the Moon)* a recording of Beethoven's Moonlight Sonata was translated into Morse code, transmitted by radio, bounced off the surface of the moon and received back on earth. The code was then transposed back into a player piano scroll and played back in the gallery, the missing or altered notes serving as evidence of the tune's passage through time and space. Such hard work that is kept out of sight, that is exhaustive and, perhaps from some perspectives, unnecessary, is an important part of Paterson's practice. Bouncing music off the moon, hand-writing massive numbers on thousands of slides, sending alarmingly frequent letters, collecting images of every eclipse – these are the sorts of jobs that we usually pass on to technology or shady, far-off trade zones. With *Future Library*, though, the long-winded process cannot be outsourced or technologized. The trees can only be planted by hand and grow in their own time. For most of us, this piece can only exist as a projection into an inconceivable future that does not include us. But it proceeds into this future with its own means of realisation – a forest of trees and a board of trustees with a mandate – already in place.