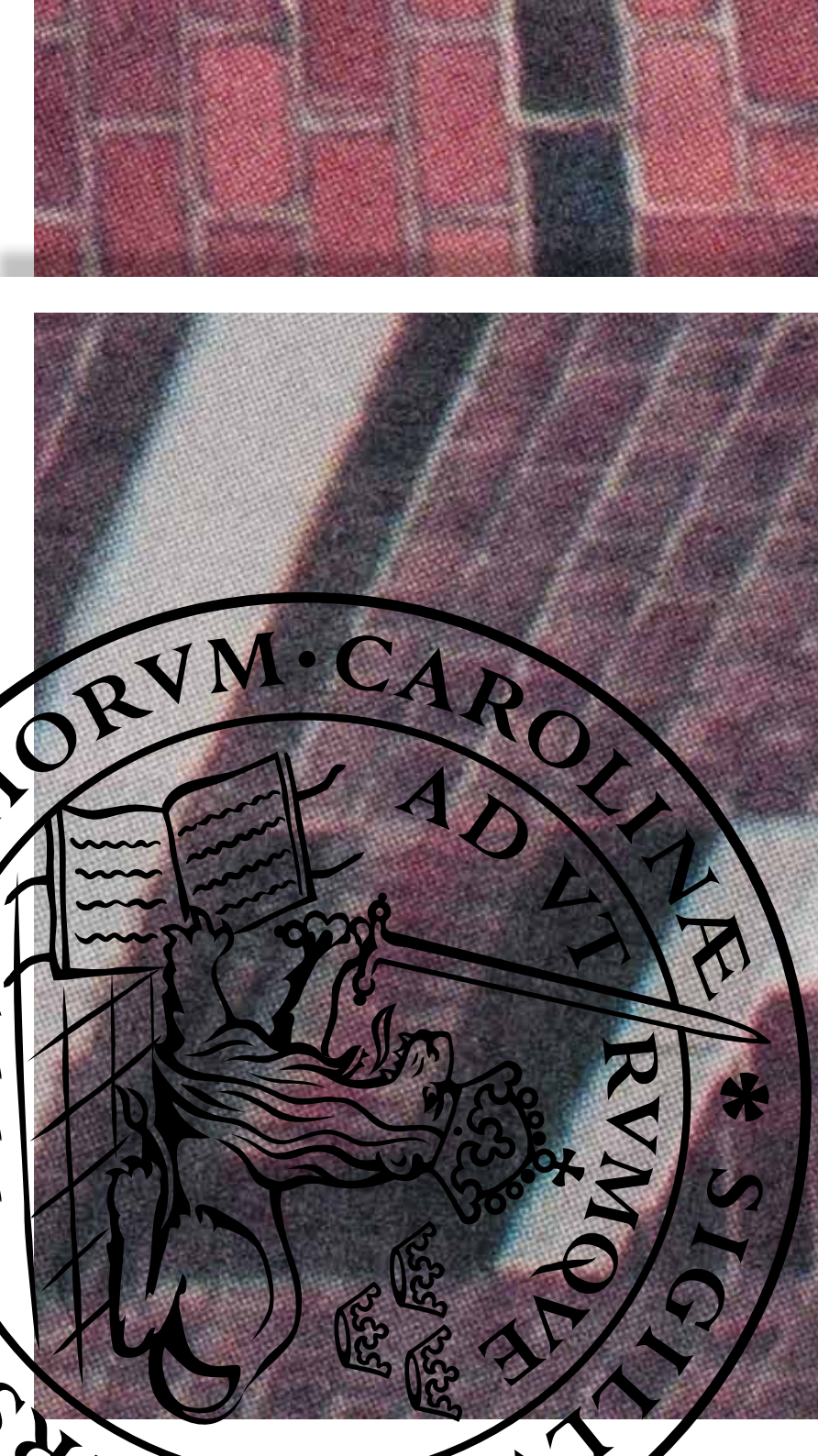
Malmö Art Academy

2015–2016



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Foreword

The 2015/16 school year began with a big party and dinner to celebrate Malmö Art Academy's twentieth anniversary. The event was open to all students, alumni, teachers, and guest lecturers. We were expecting around a hundred and fifty guests, but twice as many showed up. It was a memorable night, during which many old friends were reunited in the light of the full moon.

Critical & Pedagogical Studies took on a new batch of master's students, who have already made their mark by publishing collective writings and organising their own room in the school's annual exhibition. During the year, the CPS students took part in the Steirischer Herbst festival in Graz, Austria, and Cultural Documents in Filignano and Rome, Italy.

Three of our doctoral students—Rosa Barba, Marion von Osten, and Andrea Ray—successfully passed their 50-percent seminars, which means they have reached the halfway point in their doctoral studies. In conjunction with this, the whole doctoral student group presented their work publicly at Inter Arts Center in Malmö.

At the invitation of the Sölvesborg Art Society, the participants of Emily Wardill's BFA class "Some Roses and Their Phantoms" produced an exhibition at the Sölvesborg Art Centre in November, which is something the Art Academy is both happy about and grateful for.

As usual, this school year has been intense, with a series of interesting classes and projects delivered both by the school's own teachers and by guest lecturers such as Ieva Misevičiūtė, Michael Portnoy, and Kirsty Bell. It's especially enjoyable to welcome back previous students such as Anna Bokström, Tiril Hasselknippe, David Nilsson, and Ella Tillema in new roles as teachers and project assistants.

This year's excursion for the first-year MFA students took them to Glasgow and Edinburgh in Scotland under the guidance of teachers Maria Hedlund and Margot Edström.

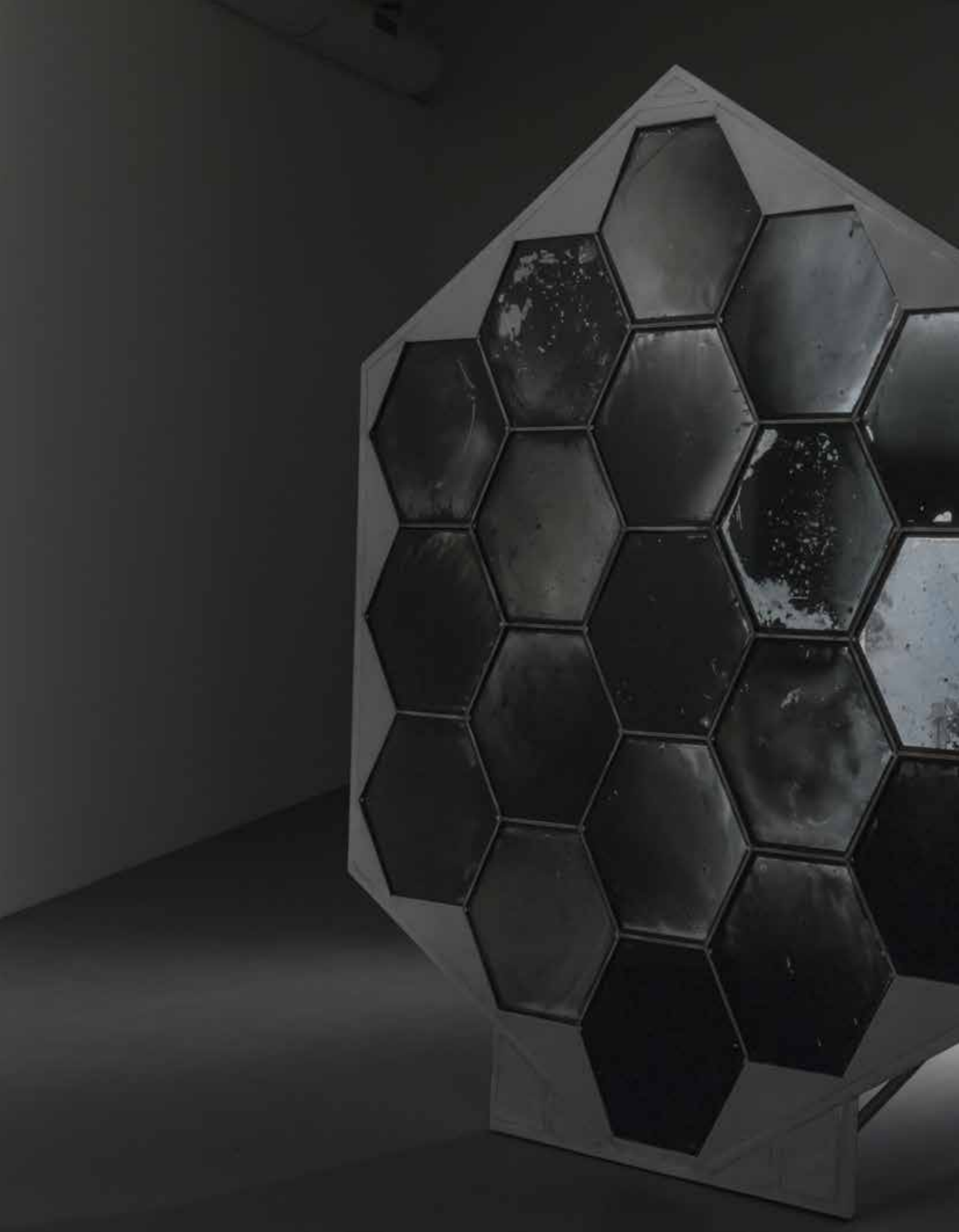
Lívia Páldi from BAC—Baltic Art Center, Visby, was this year's external participant for the BFA students' examinations, and curator Filipa Oliveira from Fórum Eugénio de Almeida in Évora, Portugal, was the participant for the MFA students'.

The Malmö Art Academy was trusted with producing the exhibition that showcased the 2015 recipients of the Edstrandska Stiftelsens Stipendium. In October, works by Ingrid Furre, Maj Hasager, Gabriella Ioannides, and Anna Ling—who were all educated here—as well as works by second-year MFA students Marie Bonfils, Karin Hald, Kalle Lindmark, and Emelie Sandström were all shown at the school's KHM Gallery. This collaboration is very highly valued by the Art Academy.

We're also very happy that one of our former students, Sandra Mujinga, was one of this year's recipients of the Fredrik Roos Stipendium.

Thanks goes to all of the professors, teachers, students, guest mentors, technicians, librarians, and administrators who make up the Malmö Art Academy, and who all do their part to make it such an unusually vibrant and organic institution. And last but not least—thank you to Marie Thams and Laura Hatfield for editing this *Yearbook*!

—Gertrud Sandqvist
Rector



Johan Österholm

Silver Transmutation, 2016. Disused greenhouse glass coated with silver gelatin emulsion and exposed to the light of the full moon, metal, lamp. 320 x 196 x 360 cm. Installation view from *Peculiar Motions at Dusk*, MFA exhibition, KHM Gallery, Malmö, 2016. Johan Österholm

Abandoned flowerbed by Lake Como, Italy, photographed in moonlight. 2014. Johan Österholm

Objects in the Rear-View Mirror

"Do you, O Thales, who cannot see what is under your feet, think that you shall understand what is in heaven?"[1]
—Diogenes, on how Thales fell into a ditch stargazing

"To go in the dark with a light is to know the light.
To know the dark, go dark. Go without sight,
and find that the dark, too, blooms and sings,
and is traveled by dark feet and dark wings."[2]
—Wendell Berry

Looking Upwards

A common perception is that darkness "falls," much like rain or snow, when it actually rises from the east as the earth turns its back to the sun. The darkening one can see gathering at the eastern horizon at dusk, like an approaching thunderstorm, is in fact the earth's shadow approaching as we rotate into it. Darkness washes and floods over land and sea, covering cities and hamlets, deep forests and groves, rivers and oceans with the blanket we call night. Nighttime is thus the time when we're caught in that shadow, "a shadow that extends into space like a cone … a hundred times taller than it is wide, its vertex 860,000 miles above the earth."[3]

For millennia the darkness of night was complete, challenged only by the occasional fire, the stars, and, of course, our closest celestial body, the moon—all of which have been central in human mythology since the dawn of man. Humankind's involvement with the night sky has been crucial both for practical incentives—such as navigation and timekeeping—but also a gradual awakening to the spatio-temporal dimensions of the universe. Had we never seen the stars, nor the sun nor the heavens, none of the words that we have spoken about the universe would ever have been uttered. As science author Timothy Ferris puts it when paraphrasing Plato: "The sight of day and night, the months and revolutions of the years, have created number, and have given us a conception of time, and the power of enquiring about the nature of the universe; and from this source we have derived philosophy."[4] The night sky is central in the development of human imagination, and at the heart of that lies the moon, the pale sun of the night. It has been used as a screen for aspirations and desire throughout the ages—but even though we may think we can ensnare it with a lasso, like James Stewart in Frank Capra's *It's a Wonderful Life* (1946)—and bring it under our control, it continues to elude our grasp. It is simultaneously far away and nearby, a paradox that we as a species have studied since we first looked upwards. And when we study it, we also study aspects of ourselves in the sense that it encourages us to think about the universe, of what might be out there in the great expanse.[5]

For this essay I would like to map a short history of humankind's relation to the night sky, particularly to the moon, and expand on how its motions and light have influenced thinkers and artists during different ages. I will give an account of my own modus operandi and how I as a thinking subject position myself in a larger artistic and intellectual discourse concerning nocturnal light and its application to photographic procedures and processes. To do this I will first need to go back in time to follow some of the trajectories and developments of the pre- and early photographic processes that evolved into the medium we know today. I will attempt to show how the development of my artistic practice is rooted in the experiments and developments that occurred during the formation of modernity, and how these processes are still viable today. I'm particularly interested in the experiments and ideas that led to the invention of the photographic medium, its influence on architecture, and its interchangeable use as a scientific instrument and as means for artistic expression.

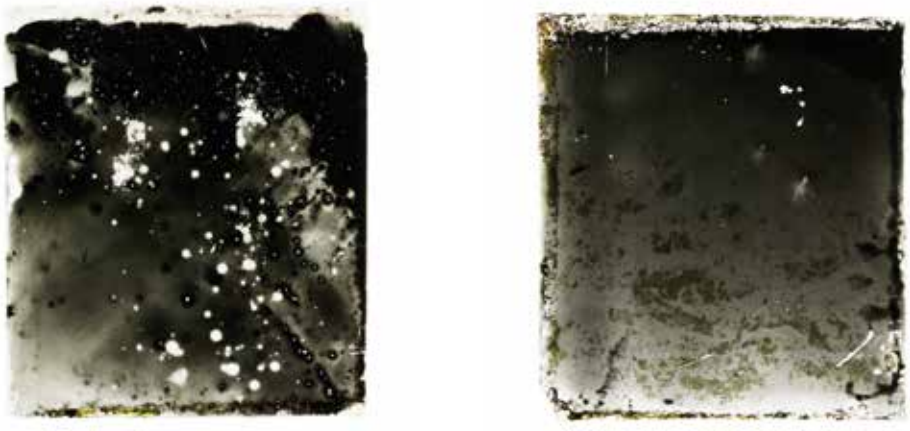
Humankind's earliest calendars were developed from the recurrent natural movements of the sun, moon, and stars, and historians say that the lunar cycle was instrumental in mankind's development of the concept of time.[6] Being the two brightest objects in the sky, the sun and the moon have been used as juxtaposed symbols for at least as long as human culture has been recorded—and most definitely much longer than that. In that sense there have been countless

Polaroid Lunagram, 2014. Polaroid contact print from glass slide, exposed by moonlight. 10,8 x 8,5 cm. Johan Österholm

culturally specific suns and moons, as different people and different cultures have each assigned their own myths and symbols to the celestial objects. What many of these suns and moons bear in common is that their relationship is a violent one, whereby if we follow their journey over the course of the day and night we can see one as the death of the other.[7]

Being the one celestial body in our sky that transitions from one phase to another in a recurring interval, the moon is, according to the poet William Butler Yeats, "the most changeable of symbols, and not just because it is the symbol of change."[8] In many early cultures the moon was a symbol for both transience and rebirth, which has been passed down to us in language when we refer to it as being "new," "young," or "old" as it shifts phases. It's through these shifts that the processes of time itself were visualised.[9] Even the Latin term "*calendare*" refers to the process by which, in the early period, priests in Rome as well as Nigeria determined when a new moon had been seen. *Calendare* translates to "to call out, to announce," and is thus a memento of the time in Rome when an official went around the streets announcing to the inhabitants that the new moon had been sighted and that therefore a new month had begun.[10] In the Islamic world, the calendar was even more closely tied to the moon since it followed—and follows—the lunar year of 354 days, with the appearance of the lunar crescent marking the beginning of each month.[11] But with the advent of watches and universal timekeeping, this close link between the time unit of a month and the waxing and waning of the moon seems to have been marginalised in the public imagination. In the words of sociologist Norbert Elias:

> Apart from experts, few people now take note of the fact that our year is related to movements of the sun and our month to movements of the moon. … In this as in other respects humans live more firmly integrated than ever into their self-created universe of symbols. Step by step, in the course of millennial development, the once-troubling calendar problem has been more or less solved. And as calendars no longer give very much trouble people dismiss from their memory the past which they still gave trouble. They are not very much interested in the stages of the development in the course of which their ancestors step by step found a solution to the troubling problem. Yet human beings must fail to understand themselves and the possibility of their open future if they fail to integrate into their fund of knowledge that of the development leading from the past to the present.[12]



Left and right: *Moon Plate*, 2014–15. Detail. Attempting to distill the essence of the silver rays of the moon by gathering its light each month when it is at the height of its luminosity. Disused greenhouse glass, silver gelatin emulsion, light of the full moon. Johan Österholm

My way of working during the past two years has been closely tied to the lunar phases: preparing material and researching locations during the waxing phase, working intensely in the field during the height of the full moon, and then developing and caring for the most recent photographic exposures as the lunar disc wanes. I've found this modus operandi—a *lunar oulipo*,[13] if you will—has brought an intensity to my practice, since the time constraints mean that I've had to follow up on thought experiments rather quickly. My aim has been to at least try them out, to make practical use of an idea, whereas without the constraints I might have easily rejected them by the mere act of overthinking. There's a fine line of balance at play here, where on the one hand an idea has to be actively pondered upon, and on the other too thorough an examination risks a state of paralysis by making the potential work impossibly large and thereby futile to act upon. I've used said constraints to allow my works to grow step by step over time, shifting shape and blending together along the way in a manner similar to the moon's changing face.

The brightness of the moon varies considerably, and its luminosity, measured in lux, is influenced by several factors, the moon phase being just one of them. During the night of a full moon, the luminance is some twenty-five times greater than at the time of the quarter moon, and two hundred fifty times greater than on a clear, moonless night. Comparatively, the sun is said to be about four hundred thousand times brighter than full moonlight. Another factor that has influence is the distance between the earth, moon, and sun—since the terrestrial and lunar orbits are elliptical, that is to say not perfect circles. The thickness and make-up of the atmosphere also changes the luminosity, since there is a loss of light as it passes through the different layers of air. In dry, clean air, the atmosphere has relatively little impact, whereas moist or dusty air lessens the intensity of moonlight. For atmospheric reasons the height of the moon relative to the horizon also has influence on its intensity, as does earthlight—*clair de terre*—the reflection of a reflection; moonlight reflected from the surface of the earth back onto the moon, perceptible especially some days before and after the new moon, when the outline of the lunar disc is clearly visible, although only a crescent is directly illuminated by the sun.[14]

I'm drawn to moonlight since it in some ways is a thing of the past. There is, according to the International Dark-Sky Association, a rapid decrease in places on earth where one can experience a fully dark night—a night that in common language would be called *pitch black*.[15] All across the globe, the celestial light from the moon and the few planets and stars still visible compete with a vast number of street lamps, lit billboards, and other sources of illumination. For us humans, the difference between daytime and nighttime is shrinking due to the increasing magnitude of artificial illumination.[16] This is a comparatively recent phenomenon, since it wasn't until the end of the seventeenth century that European cities started having some form of rudimentary public lighting. The electric lighting that present-day societies more or less take for granted only came into use toward the end of the nineteenth century.[17] Today, if one lives in a large city or metropolitan area, it takes considerable time and effort to be able to experience darkness of the sort that thousands of generations before us lived with. Some even say that what we're experiencing is the beginning of the "End of Night," that the natural night sky—a universal heritage—is becoming extinct. Paul Bogard, author of *The End of Night: Searching for Natural Darkness in an Age of Artificial Light*, argues that the level of darkness that for most of human history was common has become unreal in the modern Western world, where the collective glow of the earth's cities and streets clearly details borders between land and water when seen from space. Some of this light does good—it guides us, gives us a sense of security, and might add to the beauty of our nightscape—but most of it is waste in the form of light pollution. In fact, says Bogard, the light we see in photos from space or from airplane windows is light that is allowed to shine into the sky, where it illuminates nothing of what it was meant to. There's energy being wasted, but more importantly there's ecological damage being done to the health of the natural world, where every living creature suffers from the loss of darkness.[18]

There's a distinction between ecological light pollution and its astronomical counterpart. Whereas the first concerns the world's increasingly light nights and their impact on suddenly changed nocturnal patterns and habits that have evolved over millions of years, the latter deals with the just as sudden loss of our visual link to the universe. The brighter the surrounding area here on earth is, the smaller the universe appears, since night sky turns to black. There's a contradiction at work here, best summarised by the astronomer Tyler Nordgren: "Four hundred years ago, everyone in Florence could see the stars, but only Galileo had a telescope. Now everyone has a telescope but no one can see the stars."[19] Light pollution is the reason why the great majority of us here on earth live under night skies where we can count the number of stars to a mere few dozen, whereas an otherwise clear night would open up to thousands of stars visible to the naked eye. The shadow that the earth rotates into each night is in a sense steadily getting lighter across the world, to the point that UNESCO has declared: "An unpolluted night sky that allows the enjoyment and contemplation of the firmament should be considered an inalienable right of humankind equivalent to all other environmental, social, and cultural rights."[20]

My series *Polaroid Lunagrams*—which consists of contact prints of old magic lantern slides made on Polaroid pack film using moonlight—followed me for more than a year, from early 2014 till the spring of 2015. The work was made by exposing glass slides made by my paternal great-grandfather,

containing pictures of the moon phases of the 1920s and '30s, using the light of the present-day full moon. For each lunar outing I packed warm and sought out the darkest places I could find in the area that I happened to visit during the height of the lunar cycle. This looking for darkness isn't merely a practical excursion, it is also a personal ritual that aims to put me in a place where I can celebrate the moon's crossing—a crossing that I feel often gets overwhelmed by the artificial lights of our cities. I go to lengths to notice the moon, to cherish it, allowing it to act as a celestial compass for me. I often found my dark safe haven along the coast (the open sea seems to inhale light), in rural fields, and in groves near a national park where public light is either forbidden, shielded, or kept to a minimum. Upon entering the dark I'm at first hesistant, held back by a deep-rooted fear. I tell myself that for thousands of years travelling in moonlight was considered to be the safest option for nighttime navigation.[21] It's a weak mantra at best, but its assurance calms me down somewhat. So far in my nocturnal excursions I have never encountered a threat, and I've only been approached a couple of times; there seems to be a tacit agreement between those awake at such hours, in such darkness, that one keeps his or her distance—people and animal alike—out of reach of human sight and sound.

One summer moon I found myself working among abandoned greenhouses on the steep hillsides of Lake Como in Northern Italy. I was in Como for an artist research laboratory and had for the past few nights struggled with heavy cloud cover and the strong upward-pointing light emitted from the luxury villas around the lake. The series of neglected greenhouses located in a forest clearing on the hillside provided a sanctuary of warm darkness. While exposing my Polaroids in the nocturnal light, I came to realise that all around me were other materials that mimicked this very same gathering of light that I was occupied with. I was surrounded by smashed flowerbeds and greenhouses with glass panes broken by past winter gales. Suddenly the greenhouse, itself a light-harnessing structure, transformed. Viewed in moonlight, the rustic glass panes and sharp shards reflected a soft glimmer that seemed to be emitted from its inside. This inner glow swelled to the edges with alchemical potential—a potential to capture the essence of moonlight in a manner no normal photograph could.

Notes in the Dark Chamber

Much as the calendar, the camera obscura has a history that dates back thousands of years. During most of recorded human history it has been known that when light passes through a small hole into a dark, enclosed interior, an inverted image will appear on the wall opposite the hole. Thinkers have long noted this phenomenon and have speculated how it might or might not be functioning in a manner that's comparable to human vision, later correlating it to the workings of human thought.[22] As art theorist Jonathan Crary has demonstrated in regards to the camera obscura, optical instruments should be understood primarily not as technological tools but as a cultural system that redefines the status of the perceiving subject in relation to the world in a new, unforeseen way. The camera obscura was never, according to Crary, simply an inert and neutral piece of equipment; rather, it was "embedded in a much larger and denser organization of knowledge and of the observing subject."[23] He continues:

> Historically speaking, we must recognize how for nearly two hundred years, from the late 1500s to the end of the 1700s, the structural and optical principles of the camera obscura coalesced into a dominant paradigm though which was described the status and possibilities of an observer. … During the seventeenth and eighteenth centuries the camera obscura was without question the most widely used model for explaining human vision, and for representing the relation of a perceiver and the position of a knowing subject to an external world.
>
> … For over two hundred years it subsisted as a philosophical metaphor, a model in the science of physical optics, *and* was also a technical apparatus used in a large range of cultural activities.[24]

What's crucial here is that the camera obscura "performs an operation of individuation," since its process by necessity defines an observer as an isolated, enclosed, and autonomous body within its dark confines. As Crary notes, this induces a strong element of askesis—a withdrawal from the world in order "to regulate and purify one's relation" to the abundance of content of the world outside of the chamber.[25] The camera obscura thus becomes a site that is simultaneously used for observation of empirical phenomena as well as reflective introspection and self-observation. In Isaac Newton's famous *Opticks* (1704), in which he uses inductive reasoning to examine reflections, refractions, inflections, and colours of light, the camera obscura is the de facto site where his knowledge is made possible.[26] Newton's contemporary John Locke writes in his *An Essay Concerning Human Understanding* (1690) about the camera obscura:

> External and internal sensations are the only passages that I can find of knowledge to the understanding. These alone, as far as I can discover, are the windows by which light is let into this *dark room*. For, methinks, the understanding is not much unlike a closet wholly shut from light, with only some little opening left … to let in external visible resemblances, or some idea of things without; would the pictures coming into such a dark room but stay there and lie so orderly as to be found upon occasion it would very much resemble the understanding of a man.[27]

In using the dark chamber as a metaphor for human thought, Locke in effect proposes a way of "visualizing spatially the operations of the intellect."[28] And as Crary has pointed out, there are other spatial connotations that are operating simultaneously, namely the fact that when one spoke of being "in camera" in seventeenth-century England, it literally meant to be "within the chambers of a judge or person of title."[29] The observer positioned within the camera obscura thus also, in theory, has a juridical role, whereby he or she is able to modify the seemingly neutral receptive function of the apparatus. Locke introduces self-legislation and subjective authority to the observer, which leaves it up to the subject within the apparatus to police the passing of information between the phenomena of the exterior world and its interior representation. Anything that disrupts or causes disorder can be excluded, and in that sense "reflective introspection overlaps with a regime of self-discipline," the latter often visualised as an inner eye. This subjective eye reviews both ill-formed as well as clear and distinct ideas, and is completely separate from the apparatus that has allowed them to enter the darkened space.[30] Expanding on Locke's model of the camera obscura, Gottfried Wilhelm von Leibniz brought into question the apparatus itself. Leibniz did not see it as a passive receiving device through which information was passed forward without alteration to the discerning observer. Rather, he endowed the camera obscura with an inherent capacity to structure the ideas and phenomena it receives: it could, for example, be employed to avoid looking directly into the sun while still seeking to gain knowledge of it or of the light it propagated.[31] The apparatus, seen as an optical system, was for Leibniz defined by its functional relation to a cone of vision.[32] Philosopher Michel Serres consequently summarises Leibniz's mathematical concept:

> The science of conic sections shows that there exists a single point from which an apparent disorder can be organized into a harmony. … For a given plurality, for a given disorder there only exists one point around which everything can be placed in order; this points exists and it is unique.[33]

While I haven't used the camera obscura in my work per se, my relation to it comes from juxtaposing this light-based cone of vision and knowledge with the cone of shadow that constitutes our nights. The darkness of the night functions as my camera obscura, my dark chamber, where the moon takes the places of the small circular hole in the wall. My time for introspection thus comes when I'm positioned not in the flood of light but in the flood of *night*, illuminated only just so by diffuse moonlight. This is where I can let my mind wander unhindered, where I can disavow the communication devices that otherwise constantly give and demand updates. Not wanting the glare of the telephone screen to disrupt my nocturnal exposures—*do not disturb my circles*—I instead slowly adjust my eyes to the luminosity of moonlight. As darkness envelops me and limits my sight to what's just in front of me, other senses are heightened. If I'm lucky—and not too cold—a soothing feeling of clarity might come over me. I then bring out one of my several black notebooks, it's yellowish paper contrasting against the black ink of my pen, allowing me to see just enough to make notes of the thoughts that pass through my mind like the occasional shooting star overhead. I like to think that this is the moon influencing me, leading me further and further down a "lunatic trail." There's nothing sinister or maleficent about it; one could rather say that there's an exchange of inspiration, by which I use the moon as a screen to project aspirations and desires onto—much like the countless men and women before me—only to have them bounced back somewhat altered. The alterations can be minuscule, maybe a mere impulse to get up and change locations, but sometimes two synapses collide that open up possibilities hitherto unseen. Once, after scrambling to shelter to hide from a heavy downpour, I made notes with pun-like references between monsoon/moonsoon—a hopeful wish for the weather to clear up. In that sense my notebooks become places of refuge for thoughts that otherwise would have been unsaid and then forgotten, to paraphrase Bas Jan Ader. If the conditions are right, and I'm allowed to follow the lunar-thought-paths to wherever they might lead, at the end there lies something that can best be described as a veritable mental rabbit hole to euphorically tumble down. Much like in *Alice in Wonderland*, they open up another world.

The notes—sometimes mere scribbles—that I take during my lunar outings come from these impulses, and they often have the function of being seeds for thought. Further thought. A majority of the scribbles come to nothing, but as they accumulate over many lunar cycles, a rare few sometimes grow sprouts, and occasionally these sprouts bloom with astonishing haste. At other times they spend years in the nurturing soil of the notebooks before a bud might finally break the surface. If one puts aside the speed of growth, what the nighttime scribbles have in common is that they are notes made in a state that resembles what the Swiss author Robert Walser has called "sluggardizing." The term, first presented in a short story titled "Berlin and the Artist" from 1910, relates to the frantic speed and intellectual furor of the capital city that leaves the artist little rest and no choice but to pay attention:

> Berlin never rests, and this is glorious. Each dawning day brings with it a new, agreeably disagreeable attack on complacency, and this does the general sense of indolence good. An artist possesses, much like a child, an inborn propensity for beautiful, noble sluggardizing. Well, this slug-a-beddishness, this kingdom, is constantly being buffeted by fresh storm-winds of inspiration. The refined, silent creature is suddenly

> blustered full of something coarse, loud and unrefined. There is an incessant blurring together of various things, and this is good, this is Berlin, and Berlin is outstanding.[34]

If one exchanges the city of Berlin in Walser's story with that of the contemporary digital information landscape, then the concept of sluggardizing becomes a useful tool for thinking about artistic processes in the present day, a whole century after the term's introduction. The British artist Tacita Dean has interpreted it as "the ability to work while appearing to be doing nothing, most often when lying down."[35] Dean speaks of this state as one of the most important for artists, one that is a close relative to daydreaming but also has ties to the surrealist idea of objective chance championed by André Breton. It is a mental state of serendipitous "brain idleness" that is very difficult to achieve, a state of chance encounters between thoughts and associations that give birth to new trains of thought driven by the subconscious. It brings forth associations and ideas that one most likely wouldn't have been able to actively summon. Most importantly, it is a state that Dean sees as being threatened with disappearance; that we as a species are losing our ability to daydream, since every idle moment can be filled by fiddling with a mobile phone.[36] The mind is kept active, but it is an activity that has quite strict boundaries, defined by whatever topic might be trending online on a particular day. Without too much hyperbole, one doesn't merely *wait* for the bus anymore, one *scrolls*. But waiting is a time of boredom, a boredom and quiet despair that at times seems to know no end—I am reminded of entries made in a notebook of mine while waiting in the terrible corridors of Centre Hospitalier Universitaire de Caen, my sister going through another dose of radiotherapy in the room next to me—but it is also a time when one's mind can be left to wander. I have found myself being able to reach this mental state of idleness—or at least the territory that constitutes its borderlands—while working in the extended dark room of the night, one that doesn't consist of light-isolating walls and ceiling but of sand dunes and beech trees clad in silver light, with the celestial dome overhead.

Heightened Sensibility

Almost two centuries before my moonlight exposures by Lake Como, William Henry Fox Talbot spent his honeymoon by the same shores in the autumn of 1833. Talbot, a polymath in the true sense, who at the age of thirty-three had already published four books and twenty-seven scholarly articles on a wide range of subjects spanning fields like mathematics, chemistry, astronomy, botany, and art history, spent part of his visit sketching by the mountain-lined lake, with one eye pressed close to a camera lucida. A simple draughtsman's aid "consisting of an adjustable metal arm fastened at one end to the artist's sketchbook or drawing board and supporting a glass prism at the other," it allowed the young man to see a refracted image of the Italian landscape superimposed "as if by magic" on the pages of his sketchbook. For a skilled draughtsman it was but a simple task to trace the outline of the village, the lake, and the distant mountains with his or her pencil. But Talbot was not satisfied, "for when the eye was removed from the prism—in which all looked beautiful—I found that the faithless pencil had only left traces on the paper melancholy to behold."[37] Art historian Malcolm Daniel writes:

> Talbot's frustration that day with the camera lucida led him to recollect his experiences ten years earlier with another drafting aid, the camera obscura—a small wooden box with a lens at one end that projected the scene before it onto a piece of frosted glass at the back, where the artist could trace the outlines on thin paper. The camera obscura, too, had left Talbot with unsatisfactory results, but it was not his own feeble drawings that he remembered after a decade. Rather he recalled with pleasure "the inimitable beauty of the pictures of nature's painting which the glass lens of the Camera throws upon the paper in its focus—fairy pictures, creations of a moment, and destined as rapidly to fade away." These thoughts in turn prompted Talbot to muse "how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper." "And why should it not be possible?" he asked himself. Talbot jotted down thoughts about experiments he could conduct at home to see if Nature, through the action of light on material substances, might be brought to draw her own picture.[38]

The following year, back in the English countryside outside of London, Talbot started experimenting with the idea that had occurred to him on the shores of Lake Como. He soon found that by coating a sheet of fine writing paper with salt and a solution of silver nitrate, the paper would darken in the sun, and that adding a second coating of salt impeded further darkening or fading. In this way Talbot was able to make very precise tracings of botanical specimens. He pressed a leaf or a plant on top of sensitised paper and covered it with a sheet of glass, which was then exposed to the sun; the areas of the paper not covered by the plant would darken, while the parts where the plant blocked the light remained white. Talbot had thus discovered how to fix an image onto paper, albeit a rudimentary and only partially stabilised one. He call this discovery "the art of photogenic drawing," and began to slowly improve his chemistry over the next few years. It wasn't until 1839 though, when news broke of Louis-Jacques-Mandé Daguerre's invention that recorded camera images onto metal plates—known as the daguerreotype—that Talbot started to devote himself fully to developing and promoting his own process.[39] Notably, whereas Talbot initially

used his photographic technique to outline plants, Daguerre was early on urged by French Academy member Dominique François Arago "to make photographic maps of our satellite," the moon. Arago appreciated that photography would not only be more efficient and accurate than drawing by hand, but that it could also produce images of astral bodies inscribed by their own light.[40]

The work that I started in Como is related to Talbot's and Dagurre's experiments in the sense that they too attempted to gather elusive light and through it draw the outlines of matter. For me, the actual glass of the greenhouse became the protagonist of many of the works made during the following year. Like Talbot I returned in my mind to the fertile shore and hillsides of Lake Como, but whereas Talbot developed a heliographic mode of image making through photograms, I instead focused on the light of the night, much more obscure. For my work *Moon Gatherers* (2014–), I transported some of the glimmering greenhouse shards back up north to Scandinavia and prepared them with a light-sensitive silver gelatin emulsion. I then used the shards in the manner that Talbot used botanical specimens, placing the now light sensitive but to the eye opaque shards on top of a photographic paper, exposing them by moonlight. The results are images in which the light of the moon has seeped through the opaque emulsion and written the inside of the glass on the underlying paper—performing something that can be likened to an X-ray in the process.

A Glass Ceiling: Photographic Architecture

As the photographic medium developed during its first decades, the low sensitivity of the nitrate solutions used demanded a lot of light for a proper exposure. With the increasing popularity of the new medium, photography started having a direct influence on architecture. As the Belgian artist Ives Maes has noted, "every photographer that took himself seriously had his own laboratory," and because of the precarious nature of the early photosensitive material, domestic houses were architecturally adjusted or altered to fit small darkrooms and laboratories. When designing new buildings, architects from the mid-nineteenth century onwards would often include a darkroom in their drawings. The darkroom could later be recognised from the outside from the red-glazed windows.[41]

Another crucial influence came with the invention of the photographic portrait studio. Initially the exposure time that the process of both the daguerrotype and Talbot's calotype required caused problems when it came to moving subjects, even if the subject moved ever so slightly. This was solved by constructing rooms clad with windows, making daylight abundant—a reversed darkroom of sorts, where an ingenious lighting systems reflected and focused the sunlight on the sitter, reducing the amount of time needed for proper exposure. It didn't take long after the first portrait studio opened in London in March 1841 for a boom in the construction of specially built glasshouses situated in gardens and on rooftops around the city. As Maes has shown, glasshouses appeared in

Structure for Moon Plates and Moon Shards, 2014–15. Disused greenhouse glass, silver gelatin emulsion, light of the full moon, wooden structure. 200 x 190 x 70 cm. Installation view from *The Camera's Blind Spot III: LA CAMERA. On the Materiality of Photography*, Palazzo De' Toschi, Bologna, 2016. Johan Österholm

photographers' practices almost instantaneously after portrait photography was made feasible, since they allowed for the best possible lighting situation.[42] This early influence of photography on architecture reached a climax of sorts with the Great Exhibition in London in 1851—the first in a series of exhibitions that would later be known as the World's Fair—for which the temporary exhibition hall the Crystal Palace was constructed in Hyde Park. The construction used cast iron and glass and covered a huge area, measuring 563 metres long, 139 metres wide, and 33 metres at maximum height. Maes writes: "An endless complexity of columns carried the eye upward in one unbroken vertical line from the ground to the roof. They served to support 273,100 superficial meters of glass, weighing over 400 tons, covering the iron anatomy with a deceptive airy lightness." Its modular design allowed parts to be manufactured in different areas of the British Isles and then shipped to London, where teams of workmen bolted, welded, and slotted the building together in a mere seventeen weeks. Being temporal in nature—the Crystal Palace would have to be dismantled after the Great Exhibition had finished—it was made with the camera in mind. Its translucency made it ideal as a photographic studio, and the resulting photographs served as imperial propaganda aimed to showcase the technological superiority of the British Empire.[43]

Glass had already been essential for the photographic medium from the onset, as it was necessary in the production of the lenses for the camera, but it wasn't long before the technological development of the medium also incorporated glass as a sensitised part of the process. Soon glass plates were coated with wet collodion emulsion, which created glass-based negatives. These negatives were significantly more sensitive to light than previous emulsions and they allowed for image reproduction through contact printing.[44] At the same time, glass was a valuable material, sometimes leading photographers to scrape their plates clean to start over. Writer and historian Rebecca Solnit discusses this in relation to the Civil War in the United States, where many of the negatives of the violent conflict were recycled directly into greenhouse plates without being scraped, "their images of the harvest of death gradually fading away to let more and more light in on the orchids or cucumbers beneath."[45] This evocative image was planted in my mind a decade prior to my moonlight excursions in the abandoned greenhouses in Como, but somehow the shimmering pieces of glass brought the latent image forward. So I gathered the shards and meticulously wrapped them for safekeeping on the journey back up north. The glass, overlooked for what appeared to have been many seasons, became precious again.

Orbital Points

An artist that has had great influence on my way of working is the aforementioned Tacita Dean, who led the artistic research laboratory that summer in Como. Given the confines of this essay, I will focus on one of her early works, *A Bag of Air* from 1995. The 16 mm film depicts Dean rising in a hot-air balloon to gather the alchemical substance of dew. But in her writing on the film, Dean describes how the original intention was to gather fresh spring clouds to turn their substance "with invisible meaning into something physical and tangible" by alchemical transmutation.[46] She had chosen a region in France known for its morning mist, Lans en Vercors, but realised at dawn on the day of the scheduled shoot that no balloon would go up in the unreliable spring air if there's any sign of cloud in the sky. As Dean sought out valleys in the area to locate misty weather conditions ahead of sunrise, "it became obvious that it was going to be a beautiful, clear day. In fact the clearest day that anyone could remember. … So we rose on a beautiful morning, up high above the mountains, and caught fresh, clear air." Serendipity had altered the work, for when Dean researched the clear, upper sky, she found that it was the mythical stuff of ether. The 16 mm film shows aerial shots of a mountainous forest landscape and bags being filled with air. Dean's voiceover narrates:

> If you rise at dawn in a clear sky, and during the month of March, they say you can catch a bag of air so intoxicated with the essence of spring that when it is distilled and prepared, it will produce an oil of gold, remedy enough to heal all ailments. And as you rise at dawn to the upper ether, and lean out to catch the bag of air, they say that you are trapping the ascending dew on its voyage from Earth to Heaven. And if you repeat this process each clear dawn for a thousand mornings, you will gather enough essence to fill a sealed flask and begin your manufacture. And in your flask will be a delicacy of substance that is both celestial and terrestrial. And if you separate the distillate from the residue each time and over many months, and until you reunite them at the end of your manufacture, they say you will have transformed your bag of air into a golden elixir, a preparation of etheric medicine capable of treating all disharmonies in the body and the soul.[48]

Another seminal artwork in my own library of go-to references is the conceptual artist Jason Dodge's *Darkness falls on Wolkowyja 74, 38–613 Polańczyk*, Poland, from 2005. Dodge has an acquaintance who spends her summer months looking after a house in southern Poland while the owner is away on holiday, and for this work he commissioned her to remove all sources of light from the house. Nothing was to be forgotten—neither fluorescent bulbs, nor illuminated switches, nor pilot lights, nor refrigerator light—even night lights and matches were collected from drawers and cabinets. The work is presented as a colourful and quite dusty jumble of light sources dumped on the gallery or museum floor, appearing at first glance as leftovers from a demolished house, but upon closer

inspection revealing an assemblage to which great care has been given.[49] This way of assembling objects and the accompanying title that, as in the majority of Dodge's works, functions as a sort of story opening that is to be completed in some way or other, is what lures me in.[50] By encountering the jumble on the floor and entering through the semantic door of the title, I'm transported outside of the gallery space. At once I envision a distant darkness that has permanently set on a faraway house at the edge of a forest. The lightbulbs and matches are given a relic-like aura—they are no longer mere everyday objects but instead are granted the sort of magical quality they had when first invented. The light giver thus becomes, through a small semantic shift, that which grants darkness. This, for me, is the poetic core of the work, where the everyday object is given magical qualities through a very specific reading of it. It sharpens my perception, since it reminds me of what I haven't been seeing—it points to something that I have overlooked. This way of using objects and texts to build narratives that continue to grow in the audience's minds—Dodge refers to these conceptual resonances as "lightness"—is a sort of conceptual beacon for me;[51] I might not be there yet, but it is the point that I'm navigating towards.

My work *Structure for Moon Plates and Moon Shards* (2015) came out of the process of turning the glass shards of the Como greenhouses into alchemical moon shards. When working with these shards over a series of lunar cycles in the autumn of 2014, I came to realise that there was another work waiting to be made—a work on a larger scale, with full-sized plates. Seeing as the summer season had drawn to a close, I skimmed through websites that listed disused greenhouse materials for sale. I found what I needed at a farm in the countryside a few dozen kilometres outside of Lund, and soon my studio housed some one hundred plates in various sizes and states of decline. Not knowing what form the resulting work would take, I started preparing the plates by washing one side and applying the silver gelatin emulsion on it. The plates were then dried and stored in light-proof boxes that doubled as transport crates. Each full moon I brought the boxes to the countryside, by either transport bike or car, and left them outside to gather the light of the full moon. I patiently waited next to them, at times setting up a tent and falling asleep exhausted just before dawn, before putting the plates back in their protective boxes again. Months passed and my studio filled up with stacks of materialised moonlight leaning against the walls. The notes I made during the nights out in the field took on a sketch-like form where architectural figures, scribbles in themselves, appeared. These figures grew into a black wooden structure of a greenhouse corner, a cross-section that was tall enough for me to stand inside, but also open on one side to allow for a sense of continuation. Thus the resulting work extends beyond the physical limitations of the structure itself, and in turn references the shared ancestry of photography and architecture.

Measuring the Imperceptible

In January 1839, Talbot countered Daguerre's claim to being the inventor of photography by exhibiting some of his photogenic drawings at the Royal Institution in London, where his photomicrographs of plant stems caused a sensation within the scientific community. Fast forward to the early twenty-first century, and some of the very same prints were shown in the San Francisco Museum of Modern Art, where, as photography historian Kelley Wilder has noted, the driving forces behind the exhibition weren't scientific politics but instead an increasingly enthusiastic "modern appreciation of the look of scientific photographs that revealed to us invisible worlds, motions and objects."[52] Scientific photography developed out of the ability to give form to the intangible—the ways the medium could "lend form to things that were not normally visible to the human eye," giving them the appearance of something permanent and solid. The early scientific experiments with photographic processes that were able to freeze motions mid-air, depicting the surface of the sun, faraway nebulas, and the bones inside a human hand, proposed a radically different view of the world in that they revealed what lies beyond human vision.[53]

The camera obscura and the early photographic processes that came out of it were considered to operate in a manner equivalent to vision by imitating the functioning of the human eye. The mechanical eye of the camera was seen as providing "images," much as the human eye provided "views," and the lens of the camera and its internal receptive surface had apparent similarities with the spherical shape of the human eye and its receptive retina.[54] As I have attempted to describe, there is, historically speaking, a strong focus on the analogy between the camera obscura and human vision and thought. But with the evolution of the photographic medium and its use within an increasingly wide array of sciences, a gradual shift occurred that led away from the field of vision and optics. Photography theorist Michel Frizot has argued that this shift occurred in the 1880s with the appearance of the gelatin silver bromide process, much more sensitive than what came before and capable of exposure speeds down to one hundredth of a second. To manage this "non-human time," a special mechanism had to be developed: the mechanical shutter. Together these two inventions uprooted photography from the visual system inherit in the camera obscura and planted it instead in the middle of the world of physics.[55] There were both technical and conceptual reasons for this replanting. On the technical side there were crucial differences between the eye's retina and the camera's light-sensitive negative, first and foremost the different ways they read and process light through their sensitive and receptive surfaces. The photographic surface is industrially made and homogenous, whereas the retina is organic and heterogenous, meaning that all points on the photographic surface have the same properties, while the visual

faculties of the eye are reduced to the central fovea (which control the directional and converging nature of the gaze). Even more crucially, the action of light is global, synchronous, and immediate over the whole photographic surface, and the effects of it are cumulative: light adds up, meaning that a long exposure with a camera reveals details in a moonlit landscape that are impossible for the eye to discern.[56] Another way of putting it would be that the optical image projected in a camera obscura is a *light image* changing in real time, whereas the photographic event itself is the recording of said image on a surface over a period of time by bringing about material changes in the surface. There thus remains a record of the event, a record of stored data that can be used to produce a visual image.[57]

The cumulative aspect presents another departure from the earlier visual system. As Frizot has argued, there was also a fracture in how time was perceived. The time of vision is, according to Frizot, human time, which is to say that it is "sensational in nature, impossible to measure, evaluative without involving standardization or method, and belongs only to the domain of the free will." The time of photography, on the other hand, "is the time of physics … the time of clocks, or universal time; it concerns measure—the time of photography is metrical … it *must* be measured to obtain a photograph."[58] As a result photography has the ability to extend from the infinitely small to the infinitely large, dividing and layering time beyond the limited interval of human time—an interval that for centuries has been defined by the hour and the minute, a timescale that in its turn refers to the motion of the sun and the length of the day.[59] Depending on the magnitude of light and the sensitivity of the photographic material used, by the 1880s it was possible to photograph at speeds ranging from a fraction of a second to many minutes, and this opened up new fields of use for the medium.

Towards the late nineteenth and early twentieth century these much reduced exposure times allowed for the camera to photograph the motions of animals and humans alike. In 1878 Eadweard Muybridge famously photographed a horse and horseman at full gallop, seizing them in one five-hundredth of a second by using multiple cameras. He revealed for the first time "man's shortest flight in space—a journey so short it had previously remained imperceptible," where four legs converged under the horse's body, hoofs nearly touching each other in a shadowy flight.[60] Four years later, in 1882, the French physiologist Étienne-Jules Marey surpassed this one five-hundredth of a second limit with a single-lens photograph, and at the end of the First World War in 1918, the last assistant to Marey, Lucien Bull, was able to photograph fifty thousand images in one second.[61] In her analysis of the history of the short timescale of a tenth of a second, Jimena Canales has shown that the development of these techniques to freeze movement and time came about in a time period when there was an increased focus on timescales that measured in the smallest fractions of a second. Understanding and controlling these minuscule periods through the development of science and technology was considered essential to the survival of the modern project—in virtually all parts of the machine that drove modernity forward one can find references to the tenth of a second. Thus, even though modern communications such as the telegraph brought about a great increase in the interchange of methods and ideas between nations, Thomas Edison's chief laboratory engineer noted there was transmission delays throughout the system that made him conclude: "We all live on a tenth of a second world."[62] Within psychology the importance of this short timescale was instead linked to reaction time—the time elapsing between stimulus and movement—or the speed of thought that was frequently measured to be between one- and three-tenths of a second. Increasing the speed of reaction was seen as a way of increasing survival in the modern world: "If a playing child suddenly runs across the track of the electric railway, a difference of *a tenth of a second* in the reaction-time may decide his [or her] fate," one Harvard scholar wrote.[63] Controlling and improving the speed of reaction could thus lead to a way of pre-empting death itself.

Reaction time was also central to the field of astronomy, where in the nineteenth and twentieth centuries the standardisation and comparability of celestial measurements became crucial for arriving at absolute universal measurements. Astronomers thus focused on a different aspect of reaction time, namely that of personal equation. It had been discovered that different individuals differed in their timing of star transits, and worryingly it seemed these differences were individual and had a tendency to oscillate between one to a few tenths of a second.[64] This small error had large consequences when the specific astronomical readings were used to determine the time and longitude for map making. If the readings were a few tenths of a second off, they resulted in discrepancies of nearly half a kilometre.[65] But if these small errors proved to cause discrepancies of hundreds of metres here on Earth, one has to remember that the magnitude of error increases with the distance it tries to measure, and that during the eighteenth and nineteenth centuries astronomers around the world were trying to establish an accurate measurement for the distance of the universe. On that scale personal equation led to enormous discrepancies, and there were examples where scientists dismissed assistants for persistently recording the passage of the stars more than half a second later than his or her superior.[66]

Out of the astronomical events of the nineteenth century, it was the 1874 and 1882 transits of Venus in front of the sun that became the main challenge for the field of astronomical science. As Canales writes: "The event was exceptional because of its rarity: transits of Venus across the sun occur only approximately twice every hundred years." The challenge

consisted in timing the precise moment of the apparent contact between Venus and the sun, but the efforts so far had been plagued by the lingering discrepancies caused by differences in the order of a few tenths of a second of human reaction time. Measuring the moment of contact from two precisely defined places on Earth—a world apart—would give scientists a chance to close a century of debate surrounding the most important constant of celestial mechanics: the solar parallax. A reliable figure for the solar parallax would allow astronomers a chance to determine the distance from the earth to the sun, set the dimensions of the solar system, and, using Newton's law, deduce the masses of the planets. If astronomers missed their opportunity during the 1874 and 1882 transits, as they had during the transits of 1761 and 1769, they would have to wait until the year 2004 to get an accurate measurement.[68]

The transit of Venus is an event that has received a lot of public attention in our time, in great part because the 2012 transit was the last chance to see the small planet pass in front of the enormous sun in our lifetime; the next transit won't occur until 2117. In his complex film *Black Drop* (2012), the British artist Simon Starling triangulates the technological developments that were made in the nineteenth century to try to counter the problem of personal equation with the history of the colonial outposts of Hawaii and Tahiti, where the 1874 measurements were made. As the final part of the cinematic equation he brings the very medium of film itself into the triangle. Many of the developments for the 1874 and 1882 transits were pre-cinematic tools that later developed into celluloid motion picture film. One central point that brings together the transits of the nineteenth and twenty-first centuries is that they were both caught on film technology—Starling used 35 mm film stock—and that it is highly unlikely that it will be possible to use that fast-disappearing technology for the 2117 transit. In that sense, Starling says, the transits of 1874 and 2012 form parentheses around the rather short history of pre-digital film technology.[69]

Pomological Revelations

Simon Starling's work together with that of the Portuguese artist duo João Maria Gusmão and Pedro Paiva form part of the conceptual soil from which my MFA degree exhibition at KHM Gallery took its starting point. Gusmão and Paiva are known for their films, photographs, and camera obscura installations, as well as their sculptures, through which they present physics experiments, natural processes, and everyday or historical episodes.[70] Their films are often shot in slow motion on 16 mm colour film, and although their multitude of philosophical and artistic references makes it hard to focus on just a few, those that reoccur often are the photographic experiments of Muybridge and Marey from the late nineteenth century. In *Donkey* (2011), for example, the horse used in Muybridge's 1878 study of animal locomotion has been replaced by a lame donkey who's keen on running only in one direction: towards home. It's as if we no longer have to explain the magical trick of imperceptible flight.[71] Gusmão and Paiva are founders of the International Society of Abissology, a speculative pseudo-scientific study of the abyss, the negative space that offers a chance to escape the presumed natural order of things. Yet it is a science that eludes an exhaustive definition.[72] As some have noted, the works of the duo inhabit a certain speculative mechanism, "where the work is never a didactic transposition, but rather an investigation, a hypothesis that the viewer is invited to identify; or, if we prefer, it may be the aesthetic spell of a world populated by characters performing tests out of a slapstick comedy, trapped in the endless demonstration of arcane theories."[73] What draws me to Gusmão and Paiva's practice is this tongue-in-cheek oscillation between myth and science. In their writing the two propose a counterpoint to the empirical paradigm of Karl Popper, where the claim to truth of any scientific theory depends on its refutability. Within Popper's paradigm a verifiable proposition is true until proven otherwise, but what's also implied is that the force of the scientific argument and its ability to make sense of the world are limited to empirical facts for which one can find an explanation. Abissology's counterpoint is a theory of exception that seeks "among the most unreasonable arguments" for that which has not been seen and is only seldom thought about; it is a theory of the improbable.[74] It combines the innocence of a child with the acumen of a philosopher, and it's not for nothing that the duo has been likened to the armchair mystics from a story by Jorge Luis Borges—examining the most mundane details in search for the hidden key to the universe.[75]

It is through improbable reasoning that I set it upon myself to traverse large distances of time to reach a very specific moment in history: the fraction of a second it took for an apple to fall in Isaac Newton's orchard on an autumn day in 1666. The story tells us that Newton had returned to his childhood home of Woolsthorpe Manor in Lincolnshire after the plague had shut down Cambridge in 1665, and that one day, as the afternoon descended into dusk and the moon appeared as a pale disc above the trees, he was startled by the sight of an apple dropping to the ground. "Does the moon also fall?" he asked himself, as he returned to the worktable, and made a mental note for what would later become the law of universal gravitation, the starting point for the Scientific Revolution.[76]

Much has been written about this event, and schoolchildren around the world are still being told the fable of Newton having a "eureka moment" after slumbering in the garden and being woken by an apple falling on his head. I call this particular version of the story a fable since it didn't enter into popular narrative until nearly a century after Newton had passed away. As literary historian Julia L. Epstein has shown, the falling apple has many different legends associated with it, the most famous one of Newton's

time being Voltaire's portrait of the scientist in his *Lettres philosophiques* (1733) and *Éléments de la philosophie de Newton* (1738). It is to Voltaire that the famous story of Newton's discovery of gravity under an apple tree is usually attributed.[77] Through Voltaire's writings one meets a Newton that is represented as an intermediary between humans and spiritual power, a man that changed what we know about and how we perceive the material world. Epstein argues that Newton's apple had a mission for Voltaire in the sense that it allowed him to appropriate the legend of the apple tree and invest it with the power of Christian tradition, that is, the power associated with the legend of Eve plucking an apple from the tree of knowledge in the Garden of Eden.[78] But whereas Eve in doing so performed the original sin, Newton in Voltaire's eyes did not rob his orchard of anything—he was merely "struck" during contemplation. Newton's interest is in the force that propels the apple to earth, and he seeks to locate and understand that force—not to gain it instantly by taking a bite from the forbidden fruit. The apple in the orchard of Woolsthorpe Manor, Epstein argues, is also an apple of knowledge in the sense that it illuminates a divine law that regulates the system of the world, and in that context Newton—the foremost Scientist of his age—represents the furthest limits to which human knowledge of the natural world can be pushed.[79]

Although I find the myths surrounding Newton's apple interesting, I tried to enter the story from a non-anthropological perspective. Like the glass shards from the flowerbeds of Como, I wanted my main protagonist to be non-human—I wanted to focus on the apple itself. German-American poet Rosmarie Waldrop helped in this shift towards the pomological: "For Newton, the apple has the perplexing habit of falling. In another frame of reference, Newton is buffeted up toward the apple at rest."[80]

As I started researching the story of the apple, the first thing I did was to question the preconceived vision I had of it, a vision most definitely rooted in the version of the story told to me as a child. This apple was almost impossibly red, looking more like a polished beeswax model than a natural apple that grows on trees. My quest in finding the actual apple variety that spurred Newton's research led me

Installation view from *Peculiar Motions at Dusk*, MFA exhibition, KHM Gallery, Malmö, 2016. Foreground: *Enlightened Bloom (Stalk)* & *Enlightened Bloom*, 2016. The Beauty of Kent (Newton's Apple), silver gelatin emulsion, photographic negative with the light from the star Beta Centauri. Cherry and walnut framed archival prints. 128 x 103 cm. Background: *The Attraction of the Ground (Motion Study),* 2016. 01:00 min. video loop, Plexiglas. 75 x 50 cm. Johan Österholm

Left: *Luminous Bud (Stalk)*, 2016. The Beauty of Kent (Newton's Apple), silver gelatin emulsion, photographic negative with the light from the star Mira A. Oak framed archival print. 78 x 68 cm. Installation view from *Peculiar Motions at Dusk*, MFA exhibition, KHM Gallery, Malmö, 2016. Johan Österholm

Right: *Luminous Bud*, 2016. The Beauty of Kent (Newton's Apple), silver gelatin emulsion, photographic negative with the light from the star Mira A. Oak framed archival print. 78 x 68 cm. Installation view from *Peculiar Motions at Dusk*, MFA exhibition, KHM Gallery, Malmö, 2016. Johan Österholm

to the Botanical Garden at Lund University, which, by chance, looks after a commemorative Beauty of Kent apple tree—the very same variety that grew in Newton's family orchard. I was generously given some twenty apples in all stages of development, from bud to ripened windfall.

Dusk progressed into night at Woolsthorpe Manor that autumn day in 1666, and as Newton went to bed, possibly contemplating the peculiar motions he had perceived a few hours earlier, the stars came out overhead. They were—unbeknownst to Newton—bodies of hot plasma. Mostly made up of hydrogen and helium, a star is held together by mutual gravity, a gravity that compresses it inward in much the same way the apple strives for the centre of the earth. But as a star gets smaller, its gravitational friction causes its core to heat up, starting hydrogen fusion that radiates the excess energy outwards in the form of photons. As these photons leave the surface of the stars they are free to traverse the vacuum of seemingly endless space. Unless they encounter something, like the eyes of mammals and insects or any matter, they will continue travelling in a straight line for millions, billions, or even trillions of years. Thus what is seen in the stars above is ancient light—light with an age attached to it, much like the annual growth rings of trees. At these great distances time commands a significance equal to that of space—as the light from a distant star or galaxy reaches us, we see the galaxy as it was long ago. The galaxies in the Coma Cluster, for instance, appear to us as they looked some seven hundred million years ago, when the first jellyfish were just appearing on Earth. This phenomenon, called "lookback time" by astronomers, means that telescopes probe not only out into space, but also back into the past.[81]

Thus at the very same time as the apple fell to the ground in Lincolnshire, photons of light started travelling towards our solar system from the stars Mira A and Beta Centauri. Three hundred and fifty years later, the starlight reached Earth and was collected and fixed on a distant relative of the now-rare variety of apple that Newton first saw becoming a momentary celestial body. This luminous imprint, wherein the aging photons after centuries of traversing empty space leave a mark on the heightened photosensitive surface of the apple, forms what philosopher Henri Van Lier defines as a photographic event.[82] As Van Lier has written, "the indices of any photograph echo their cause … but at the same time its characteristic distance removes me from it: it is not some thing that has touched the film but only photons that have touched this thing and the film, thereby only remotely and very abstractly linking both." Van Lier argues that all photographs produce a tension between "what is near and what is distant, between the present and the past."[83]

One of the intentions with my works *Enlightened Bloom* and *Luminous Bud* (both diptychs from 2016) is to create a photographic event that predates the invention of the photographic medium itself. I call it a photographic event both because of the aged photons involved—photons many hundreds of light years old—but also since the event it refers

to was photographic in its timescale; it took a mere fraction of a second to plant the seed for the Scientific Revolution, a revolution we're still experiencing today. To do this I wanted an organic material that has ancestral links to the original fruit: a present-day apple that has gone through generations upon generations of passing through the phases of budding and ripening by its own cumulative gathering of light for photosynthesis. By adding a silver gelatin emulsion to the flesh of the apple I only heighten this very same sensibility and allow it to gather light from stars other than our sun. By gathering distant starlight that has only just reached Earth after travelling for three hundred and fifty light-years, I've attempted to let the apple travel in time, linking the apple to the drop in the orchard of Woolsthorpe Manor. This mode of travel is not new —in fact, H.G. Wells visualised the process of time travel in *The Time Machine* (1895) as one in which the traveller is pounded by light, his eyes being hit by a photonic wind as his vehicle and the world around him speeds up. For Wells, the traveller is partially immobile, still in his laboratory, while everything around him is set in motion: first the sun rapidly accelerates in its trajectory, and then "night follow[s] day like the flapping of a black wing." The rapid motion increases until day and night merge into a greyness that fills the entire world, where finally "the jerking sun [becomes] a streak of fire, a brilliant arch, in space; the moon a fainter fluctuating band," and one can "see nothing of the stars." Yet the time traveller remains in the same spatial point that he departed from, slipping through time at such a high velocity that his physical body "[slips] like a vapour through the interstices of intervening substances."[84] In this way Wells's time traveller divides space and time and suggests that moving into time does not equal travelling in space. I would like to propose that by inserting my sensitised Beauty of Kent apples into the photonic wind of starlight, I am in fact allowing them to travel backwards into time. As they harness enough light for an image to appear on their flesh, they are at once here and not here, their physical entities remaining in the present day while simultaneously bridging the gap of time. They are again celestial bodies, granted permanent flight in the cosmos.

1 Mentioned in João Maria Gusmão and Pedro Pavia, *João Maria Gusmão + Pedro Paiva—Teoria Extraterrestre* (Milan: Mousse Publishing, 2014), 68.
2 Wendell Berry, *The Selected Poems of Wendell Berry* (Berkeley: Counterpoint, 1999), 68.
3 Paul Bogard, *The End of Night: Searching for Natural Darkness in an Age of Artificial Light* (New York: Back Bay Books, 2013), 4–5.
4 Timothy Ferris, *Coming of Age in the Milky Way* (New York: HarperCollins Perennial, 2003), 19–21.
5 Bernd Brunner, introduction to *Moon: A Brief History* (New Haven: Yale University Press, 2010), vii-viii.
6 Norbert Elias, *Time: An Essay* (Oxford: Blackwell Publishers, 1992), 193–95.
7 Brunner, *Moon*, 25–27.
8 Ibid., 29.
9 See Elias, *Time*, 193–95, and Brunner, *Moon*, 29.
10 Elias, *Time*, 193–95.
11 Brunner, *Moon*, 44.
12 Elias, *Time*, 197–98.
13 Oulipo is short for Ouvroir de littérature potentielle, which is "a loose gathering of French-speaking writers and mathematicians who seek to create works using constrained writing techniques." See "Oulipo," *Wikipedia*, last modified March 26, 2016, https://en.wikipedia.org/wiki/Oulipo.
14 Brunner, *Moon*, 67–72.
15 See "Light Pollution," International Dark-Sky Association, http://darksky.org/light-pollution/.
16 Brunner, *Moon*, 74–75.
17 Bogard, *The End of Night*, 8–10.
18 Ibid., 7–8.
19 Ibid., 209.
20 Ibid., 203.
21 Ibid., 8.
22 Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: MIT Press, 1992), 27.
23 Ibid.
24 Ibid., 27–28.
25 Ibid., 37–38.
26 Ibid., 39–40.
27 John Locke, *An Essay Concerning Human Understanding*, quoted in Crary, *Techniques of the Observer*, 41–42.
28 Crary, *Techniques of the Observer*, 42.
29 Ibid.
30 Ibid., 42–43.
31 Ibid., 51, 139.
32 Ibid., 51.
33 Michel Serres, Le système de Leibniz et ses modèles mathématiques, quoted in Crary, *Techniques of the Observer*, 51.

34 Robert Walser, *Berlin Stories*, trans. Susan Bernofsky (New York: New York Review of Books, 2012), 62.
35 Tacita Dean, "Comoggardising: The Benefits of Creative Indolence" (paper presented at XXCSAV Artist Research Laboratory, Fondazione Antonio Ratti, Como, Italy, June 30–July 23, 2014).
36 Ibid.
37 Malcolm Daniel, "William Henry Fox Talbot (1800–1877) and the Invention of Photography," Heilbrunn Timeline of Art History, October 2004, Metropolitan Museum of Art, http://www.metmuseum.org/toah/hd/tlbt/hd_tlbt.htm.
38 Ibid.
39 Ibid.
40 Corey Keller, *Brought to Light: Photography and the Invisible, 1840–1900* (New Haven: Yale University Press, 2008), 24.
41 Ives Maes, "The Architecture of Photography" (unpublished PhD, Royal Academy of Fine Arts, Ghent, Belgium, 2016), 6–7.
42 Ibid., 6.
43 Ibid., 3–9.
44 Ibid., 8.
45 Rebecca Solnit, *River of Shadows: Eadweard Muybridge and the Technological Wild West* (New York: Penguin, 2003), 36.
46 Tacita Dean, "Selected Writings, 1992–2011," in *Seven Books Grey* (Göttingen: Steidl, 2011), 12.
47 Ibid., 13.
48 Voiceover from *A Bag of Air*, transcribed in Dean, "Selected Writings," 14.
49 Catrin Loch, "Newly Arranging the Universe," in *Jason Dodge—I Woke Up. There Was a Note in My Pocket Explaining What Had Happened*., ed. Friederike Schönhuth (Ostfildern: Hatje Cantz, 2010), 56–57.
50 Friederike Schönhut, "Through Space and Time—An Introduction," in *Jason Dodge*, 11.
51 Josie Thaddeus-Johns, "Jason Dodge: Conceiving Absences Which Reveal Presences," Sleek, December 26, 2013, http://www.sleek-mag.com/2013/12/26/jason-dodge/.
52 Kelley Wilder, "Showing Science Photography," in *Revelations: Experiments in Photography*, ed. Ben Burbridge (London: MACK, 2015), 79. What constitutes a science photograph isn't easy to define, since it's a genre that spans the whole history of the medium and includes many different processes as well as a multitude of subject matters from different fields of science. Thus science photographs may appear "in a bewildering array of forms," spanning work done using the salted paper prints and daguerrotypes in the first half of the nineteenth century up until the digital inkjet prints of today. The specific "science" also spans many fields, from anthropology, astronomy, auras, particle physics, geology, geography, medicine, and so on. Giving a general account of the genre is also complicated by the fact that during the later part of the twentieth century advertising photographs started to mimic scientific photographs to the point that science photographs were even used in advertising.
53 Greg Hobson, "Foreword," in *Revelations: Experiments in Photography*, 7–8.
54 Michel Frizot, "Sculpture, between Visual Perception and Photography," in *Lens-Based Sculpture*, ed. Bogomir Ecker et al. (Cologne: Walther König, 2014), 58.
55 Ibid., 59–60.
56 Ibid., 59.
57 Dawn M. Wilson, "Philosophical Scepticism and the Photographic Event," in *Thinking Photography—Using Photography*, ed. Jan-Erik Lundström and Liv Stoltz (Stockholm: Centrum för fotografi, 2012), 103.
58 Frizot, "Sculpture, between Visual Perception and Photography," 59.
59 Ibid.
60 Gusmão and Paiva, *Teoria Extraterrestre*, 128.
61 Jimena Canales, *A Tenth of a Second: A History* (Chicago: University of Chicago Press, 2009), 2–3.
62 Ibid., 5.
63 Hugo Münsterberg, quoted in ibid.
64 Ibid., 6.
65 Ibid., 31–33.
66 Ibid., 21.
67 Ibid., 89–90.
68 Ibid., 88–89.
69 Simon Starling, "Simon Starling: Black Drop," interview by Adam Carr, Vdrome, http://www.vdrome.org/starling.html.
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71 Gusmão and Paiva, *Teoria Extraterrestre*, 123–124, 128–129.
72 Mattia Denisse, "Le Traité de Puits Essoufflé: Essai de Récit Abyssologique," in Teoria Extraterrestre, 21–22.
73 Chiara Leoni, "Scaling Mount Analogue," *Mousse*, October 2008, http://moussemagazine.it/articolo.mm?id=14.
74 Gusmão and Paiva, *Teoria Extraterrestre*, 57–58.
75 Massimiliano Gioni, "Comments on Eye Model," in *Teoria Extraterrestre*, 164.
76 Ferris, *Coming of Age in the Milky Way*, 107–09.
77 Julia L. Epstein, "Voltaire's Myth of Newton," *Pacific Coast Philology*, no. 14 (October 1979): 27, http://www.jstor.org/stable/1316435.
78 Ibid., 29.
79 Ibid.
80 Rosmarie Waldrop, "On Lawn of Excluded Middle," in *Curves to the Apple* (New York: New Directions, 2006), 97.
81 Ferris, *Coming of Age in the Milky Way*, 174.
82 Henri Van Lier, *Philosophy of Photography* (Leuven: Leuven University Press, 2007), 11.
83 Ibid., 19.
84 H.G. Wells, *The Time Machine* (Project Gutenberg, e-book 35, 2004), 37–40.