Daniela Matute Vargas

A CHAOTIC, FLAT AND MINIATURE WORLD. TOPICAL DEBATES IN DRONE VERNACULAR PHOTOGRAPHY

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A chaotic, flat and miniature world. Topical debates in drone vernacular photography

Daniela Matute Vargas
s1071122
dany_303@hotmail.com

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A mi madre y mi padre – por siempre estar presentes, aún en la lejanía.
Por dejarme ir a fin de que encontrase mi camino.

A Gustavo – por traer de vuelta la serenidad que tiempo atrás perdí.

"We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time."

— T.S. Eliot, *Four Quartets*

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Introduction

The drone became the center of a great debate in the last decades of the twentieth century and it definitely continues to be so during the twenty-first century. Since it was originally created as a war weapon, drones have inevitably unleashed a series of narratives related to war. Such matter has gained so much interest that some scholars like Gregory Chamayou in his book *Drone Theory*, have stated that the advent of said technology puts into question the concept of war. "This weapon extends and radicalized the existing processes of remote warfare and end up doing away with combat. But in doing so, it is the very notion of 'war' that enters into crisis."[1] Independently of this, not much time has elapsed for the drone to start expanding its uses.

These unmanned flying machines have made their way into different spheres of human's daily life. Drone's ability to rapidly adapt for various fields has prompted its proliferation. For example, they are used in forecasting, wildlife monitoring, mapping, agriculture, journalism, film, photography, disaster managing, anthropology, etc. Along with the constant drone propagation, the public and some industries have placed their interests in the noncombat uses of these machines. Among these still-imagined applications are seeding drones, ranching drones, drug sniffing drones, insurance adjuster drones, etc. The industrial bets on drones are such that according to political scientist Sarah E. Kreps, the domestic and commercial drone industry will be worth $82 billion between 2015 and 2025.[2]

Despite the fact that this data is based only on estimations, it is overwhelming the amount of importance, enthusiasm and fantasies drones have actually awaken in people. Even if the aforementioned potential uses will probably take many decades to see the light of day, or even some will never get to see it, it is worth underlining how all this speculative landscape represents the still undefined boundaries of what this technology actually is. Technology writer Adam Rothstein in his book *Object Lessons. Drone* argues that the drone has been "shrouded in fantasy"[3] as it has unleashed fictional narratives that sometimes contradict each other; contradictions that stress how unsure people actually are about what a drone is. "We know what a drone is. But at the same time, we don't."[4] It is precisely this web of contradictions and

[1] Chamayou, 2013, 16.
[2] Kreps, 2016, 109.
[3] Rothstein, 2015, IX.
[4] Rothstein, 2015, IX.

fantasies that sparked in me an interest to do a more in depth research about the nonmilitary applications of drones. The reason why I did not focus my thesis on surveillance and armed drones is that besides the fact that there is plenty of research being done on this issue, I am more interested in what the social uses of drone and the results of the interaction between people and this technology, can say about these unmanned flying machines. It was during this search that I encountered myself with this emergent field: drone aerial photography.

Today, the amount of drone photographic material that people are continuously uploading to the web is mind-blowing. What I found most compelling about the extensive vernacular visual material is that on the one hand, it is created by any person that may have access to a drone and a camera, and on the other hand, that a huge percentage of these images shares a compulsion to capture earth's surface from a vertical angle. Verticality, it seems, has been acquiring a great deal of importance within the academic circle as drones and programs such as Google Earth have fostered its propagation.

The visual imagery that verticality yields has generated many debates related to political issues. Additionally, a series of power narratives have created a rhetoric around vertical views that demonstrates how many capacities human beings are giving to these images or rather, how much power we are led to believe this visual material possess. In doing so, the popular perception of drone's optics has been shaped as one possessing the value of truth. The fact that a series of terms such as God's eye view or "the eye in the sky" are implied to refer to drone's vision stresses a kind of omnipresent and all-encompassing character ascribed to this flying machine. Nonetheless, drone vernacular photography displays many visual paradoxes that question the intelligibility posited on drone visual imagery.

In this sense, this thesis focuses on performing a formal analysis of drone's vertical views in order to reflect upon what kind of visual representation of space these devices produce. There are three elements that stand out and play a fundamental role in obtaining a specific spatial representation. The three topics addressed are: geometry/chaos, micro/macro correspondence and flatness. These topics guide the thesis's order as each of them conforms one chapter, making three in total. However, in order to do so, an historical account is first provided as a means to put in context these aerial views.

This historical approach permits the reader to comprehend the different stages that the field of aerial photography has experienced through time. In this process, it is interesting to

discover how related photography has been to war narratives. Likewise, this historic view demonstrates that the drone vertical views is not a completely new vision, but they are the result of a series of technological and historical developments in which these images have served a variety of purposes. A comparison between old and drone aerial photographs provides the necessary elements to understand how geometry, chaos, scale and flatness are problematized by the photographic medium and exacerbated by drone photography. Differences that underline the necessity of reviewing the very notion of aerial photography.

The reader will realize while reading the three chapters, that the ideas regarding verticality of architect theorist Mark Dorrian are a main source of information for this research. As a theorist whose main topics are architecture, urbanism, art history and media studies, Dorrian has several publications that deal with aerial views through different approaches. He studies satellite images, films, videos, verticality in architecture, but very rarely he concentrates on the photographic medium. Since drone photography is a quite new field in photography, there is not much theoretical insight on these images. This research, then, aims to provide the way in which the proliferation of drone photographs of our earth's surface is transforming aerial photography and yielding new geographies that transform the understanding of our living space.

The first chapter concentrates on examining geometry and chaos in drone photography. This as a way to provide an answer to this specific question: what are the consequences of the opposition of geometry versus chaos resulting from the vertical perspective for the perception of the spaces we live in? First some ideas addressed by Mark Dorrian on visual culture and verticality are explained. In his book *Seeing from Above. The Aerial View in Visual Culture* explains how the twentieth and twenty-first centuries have experienced a vast proliferation of vertical views which affect our perception space. Afterwards, the loss of linear perspective in photography as a consequence of verticality is studied. Insights on vertical views proposed by filmmaker Hito Steyerl are taken into consideration. Finally, this section concludes by providing some elements that conform a fractalist vision studied by mathematician Benoît Maldebrot. This as a means to integrate chaos and geometry in the space depicted.

The second chapter focuses on issues of scale and is guided by the following interrogative: in which way does the process of miniaturization in drone vernacular photography activate ideas of micro/macro correspondence and what are the consequences of this interplay for understanding the contents of these images? As a starting point, some ideas by media theorist

Mary Ann Doane and photography historian Olivier Lugon are addressed. Both authors express how relative and "schizophrenic" scale can be in photography and cinema. Afterwards, a formal analysis of drone vernacular photography is done in order to comprehend the process of miniaturization that space suffers when beholding it at a vertical angle. Finally, the insights given by Mark Dorrian in his text "Adventure on the Vertical" are provided to understand historically how this micro/macro correspondence is a product of different modes of observation.

Finally, the third chapter gives answer to the question: what are the consequences of flattened space in drone vernacular photography? A formal analysis of flatness in drone vernacular photography is elaborated to comprehend the meaning that this spatial deflation has on the perception of our living space. The historical analysis that historian Marie Thébaud-Sorger does on the work of Thomas Baldwin's *Airopaidia: Containing the Narrative of a Balloon Excursion from Chester, the eighth of September, 1785, taken from Minutes made during the Voyage of the experience of flying* functions as a bridge for linking historically former aerial views with those of the drone. In order to understand how flatness affects our perception of space, Frédéric Pousin's ideas on this issue are elaborated, specifically, his insights on aerial photographic postcards which are published in his article "The Aerial View and the *Grands Ensembles*." The author underlines the way in which aerial views can become so abstract that they resemble painting. To conclude this final chapter, definitions of depthlessness by geographer Doreen Massey and political theorist Fredric Jameson are elaborated as a way to comprehend how a lack of depth in representation yields a space that seems uncannily artificial and unanimated.

1. Space from a God's eye view. Geometry and Chaos

"In chaos, there is fertility."
— Anaïs Nin

At the beginning of 2017, there were approximately 3,044328 uploads on Instagram depicting drone photographs. This number provides an idea of how drone photographic material is gaining more public attention and users. Among the massive drone photographic material, there is one distinguishable representational coincidence–do coincidences exist? In vernacular drone photography there is a compulsion for drone photographers to depict space from a vertical angle. Urban and natural spaces, along with portraits and events are portrayed from a God's eye view[5] (Fig. 1). The proliferation of these views from above, enhanced by the drone, produces a particular spatial representation. Along with this view, truth claims about the omnipresence of drone vision have been created. However, vernacular drone photography gives rise to certain visual paradoxes relating to space that put forward the relation between chaos and geometry. In this sense, the main question of this first chapter is the following: what are the consequences of the opposition of geometry versus chaos resulting from the vertical perspective for the perception of the spaces we live in?

This chapter provides a brief history of aerial photography that goes from balloon views to drone aerial photographs. Through this historic account of aerial images, a formal comparison is made between the main different stages that this type of image making has experienced. For studying verticality's representation issues, some insights revealed by architect theorist Mark Dorrian are addressed, particularly, his ideas related to the disorienting effect that the God's eye view has on the viewer. Filmmaker Hito Steyerl draws our attention to how perspective rules have been the reigning model of representation and this is the reason why when it is lost, chaos in representation emerges. Finally, the studies regarding fractalist vision done by mathematician Benoit Mandelbrot and writer John Briggs are applied to drone vernacular photography in order to analyze how the visualization of chaos and geometry may conflate in photographic representation.

[5] According to the Oxford Dictionary a God's eye view is defined as a view as might be seen by God; a view from a very exalted, or high and remote, position. The term was coined by Josiah Holland in the nineteenth century. https://en.oxforddictionaries.com/definition/us/god's-eye_view Accessed June 10th, 2017.

History of aerial photography

The apparent ubiquity of aerial images has been prompted, in large part, by the development of new technologies like in the case of satellites and the drone. However, seeing the world from above is an activity that carries a history that extends back to the nineteenth century; a time when man was able to conquer the skies and photograph the world from above for the first time.

It was in 1858 that French photographer and balloonist Gaspar Felix Tournachon, commonly known as "Nadar," was responsible of photographing Paris for the very first time "from a tethered balloon at an altitude of sixteen hundred feet"[6] (Fig. 2). At that time, taking pictures from an aerostatic balloon was not an easy task as it required carrying heavy equipment. By comparing these earliest aerial images to the most recent ones taken from a drone, many differences appear. First of all, most of the remaining photographs taken from aerostatic balloons do not present a complete vertical angle whereas drones allow photographers to be at an exact vertical point of view from the ground. This entails several issues related to perspective as old aerial views usually keep the horizon line, or when losing it, they are still oblique views. Due to technical limitations, photographers like Nadar did not get very much detail in images. Contrary to drone photographs which are extremely sharp and detailed, these images are usually out of focus.

The development of the dry-plate process allowed photographers to go up in the skies without such heavy equipment. Two years after Nadar's aerial views from Paris, James Wallace Black took the first aerial images of America. In 1860, he flew all over the city of Boston and took his first series of aerial photographs from Samuel King's hot-air balloon the "Queen of the Air"[7] (Fig. 3). Wallace's balloon views show more detail than previous aerial photographs. Nonetheless, even if these pictures do lose the horizon line, they do not reach completely vertical angles nor sharpness. Specifically, the photographs' contours still remain out of focus.

It was in 1867 when the continuous presentations of aerostatic balloons in Universal Exhibitions allow a wider public "to gain immediate experience of the view from the air […] that began to nourish a gaze that sought to partake in the various modalities of seeing from above."[8] Paintings of these views further provided a fundamental medium whereby people would get more familiarized with bird's eye views.

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[6] Krule, 2014, http://www.newyrker.com/culture/photo-booth/origins-aerial-photography Accessed May 13th, 2017.
[7] http://www.metmuseum.org/art/collection/search/283189 Accessed May 13th, 2017.
[8] Dorrian, 2013, 46.

Picturing the world from above gave rise to ingenious modes of attaching the photographic camera to unmanned flying objects. Additionally, the development of lighter cameras and the improvement of the shutter speed enabled photographers to fix their cameras to kites and even pigeons. In the 1880's, Arthur Batut was able to attach his camera to a kite and took some pictures in France (Fig. 4). Using the same technique, George R. Lawrence was able to capture an aerial view of San Francisco after the earthquake in 1906.

Thanks to the creation of a miniature photographic device, Julius Neubronner could elevate his tiny camera to the skies by means of a pigeon in 1908 (Fig. 5). These animals were mostly used for military uses as carriers of messages and aerial reconnaissance. It was not until the first decade of the twentieth century, that German engineer Albert Maul made use of a rocket, propelled by compressed air, in order to take aerial photographs at a distance of 2,625 feet.[9] Three years later, Wilbur Wright would take the first pictures of the earth from an airplane, from which war narratives would be ascribed to aerial views. The outbreak of World War I put in motion war-like practices related to aerial photography as it was used for surveillance and targeting practices (Fig. 6). It was not until up to this point that precise vertical views were produced as airplanes allowed more control over the camera. Most importantly, verticality at last "abolished the horizon line, thereby doing away with the illusion of three-dimensionality within a two-dimensional image."[10]

Cameras' lenses experienced enormous improvements as a consequence of war; thus, they allowed better quality in images. Nevertheless, better images and more precise verticality did not translate into more visual intelligibility. When comparing airplane views to that of pigeons, kites, and balloons, the whole space depicted is less recognizable. As a consequence of portraying the world form a God's eye view, all seemed to become more abstract and less transparent. "High verticals (as opposed to low obliques) were especially unnatural to the human eye and delivered the furthest thing possible from the perceptual comfort of photographic realism. Reconnaissance images were infamously obscure and difficult to read, requiring trained photo-interpreters and a re-education of sight."[11]

The desire for capturing the world from an elevated viewpoint found its culminating moment when the Apollo 17 mission left earth and went into outer space. It was in 1972 when

[9] Rambler, 1989, 81.
[10] Amad, 2012, 80.
[11] Amad, 2012, 81.

one of the crew members carried a 70-milimetre Hasselblad camera and used a 80-millimetre Zeiss lens to take the first photograph of our planet. The image is known as *The Blue Marble* (Fig. 7). To be able to observe earth as a "small, fragile planet, lonely and isolated in the midst of the unfathomable infinitude of space"[12] was certainly paramount in forging a new conscience of our living space by giving birth to ecological discourses. As Dorrrian underlines "A key point here is the way in which the image of the planet from space produced a new kind of aerial view, one in which the terrestrial surface no longer filled the photographic frame."[13] It is worth noting that even if the camera was more distanced from the ground in the Apollo mission, these images are paradoxically more intelligible than those captured from airplanes. Even more interesting is the fact that vertical shoots taken from outer space always portray our planet in the same way.

Today, there is a myriad of images depicting the earth from an aerial view, produced by some of the 4256 satellites that orbit the planet (Fig. 8). Programs like Google Earth and Google Maps have been responsible for making these images available to the public for geographical and mapping purposes, among many other uses. The advent of the drone seems to follow the photographic tradition of attaching the camera to unmanned flying machines. As new technologies continue to emerge, vertical views of our living space keep proliferating; views that "demand a reconceptualization of the view from above"[14] as they become more unnatural to the human eye.

Drone photography. Geometry and chaos

The difference between other aerial views from the ones taken by drones relies on the distance factor. Different from an airplane, rocket, kite or a pigeon, the drone can gravitate over the ground at a relatively short distance in a very controlled manner (Fig. 9). The control over this device is such that it allows the photographer to control the flight speed as well as to program the route that the drone would follow. These machines are also connected to GPS in order to make it easier to accurately trace the drone's route. This characteristic allows for greater detail and accuracy in the photographs making them very sharp and perfectly squared. Nevertheless, like all technologies, the drone also has its technical limitations. For example, they cannot fly under bad weather, cloudy or windy days. These restrictions have visual consequences that will be further

[12] Feil, 2016, 38.
[13] Dorrian. 2013, 297.
[14] Dorrian, 2013, 296.

elaborated in the third chapter. In this vein, the technical differences that make drone aerial photography different from other ways for depicting the world at a vertical point, enhance certain representational operations that ultimately have consequences on how viewers understand the space depicted. One of these operations is the apparent visual paradox between geometry and chaos in drone vernacular photography (Fig. 10). On this regard, photographer Tomas van Houtryve underlines that drone photography "takes on an abstract geometric beauty. […] Even scenes of economic and ecological chaos take on their own serene perfection (Fig. 11)."[15] This is one of the reasons why drone vision has been claimed to possess the power to abstract reality–as if all representations were not abstractions of reality–and, therefore, works ideally in dehumanizing the target enemy when these machines are used in war contexts.

In everyday language, the word chaos suggests disorganization, confusion, entropy. When a situation becomes chaotic is because the outcome of that precise situation did not go as we had expected. This lack of unpredictability is what defines chaos. Physicist Niels Bohr explains in his article "Causality Principle, Deterministic Laws and Chaos" that the theory of chaos was paramount in understanding nature. One of the main goals of science is "its ability to relate cause and effect."[16] By basing their understanding of natural phenomena in the laws of physics and mathematics, scientists are able to predict the causes and effects of certain phenomena. The "mathematization" of natural phenomena has allowed the possibility to imagine a "'predictability horizon." In other words, the mathematical comprehension of the world has permitted scientists to predict the future effects of a system. However, in reality, systems are not that predictable as all of them, even the simplest one, "can generate random behavior."[17] This randomness is what we know as chaos and it introduces non-predictable variables that make it difficult to determine the precise effects of a cause.

From this explanation of chaos it is worth underlining the fact that when the "predictability horizon" is lost, chaos comes into a system. From this perspective, the role of the "horizon" is fundamental in comprehending mathematically the world as it provides a linear ordering–a cause and effect logic–of the world. This mode of organization is precisely how human beings look at the world as it is our natural standpoint. On this regard, Hito Steyerl states

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[15] Grossman, 2014, http://time.com/3627980/drone-country-see-america-from-above/ Accessed April 20th, 2017.
[16] Bohr, https://link-springer-com.ezproxy.leidenuniv.nl:2443/content/pdf/10.1007%2F978-1-4757-4740-9_1.pdf Accessed August 1st, 2017.
[17] Bohr, 1992, https://link-springer-com.ezproxy.leidenuniv.nl:2443/content/pdf/10.1007%2F978-1-4757-4740-9_1.pdf Accessed August 1st, 2017.

in her book *The Wretched of the Screen* that the projection of a horizon provides stability as it defines "the limits of communication and understanding. […] Within it things could be made visible."[18] This, she adds, renders the possibility of projecting a space that can be predictable, apprehensible and calculable as "it allows the calculation of future risk, which can be anticipated, and, therefore, managed."[19] Chaos comes, then, as randomness that breaks this linear logic of cause and effect. In fact, one of the three principles that integrate chaos is nonlinearity.[20]

Technology writer Adam Rothstein states that "Humans are a visually oriented species."[21] Therefore, if the mental and visual projection of a horizon is fundamental in organizing logically and visually the world, then chaos is yielded when this "horizon" is lost. This provides a starting point to comprehend how a vertical point of view produces a visual chaos that irrupts the mathematical organization of space. In this process of mathematization of the world, geometry has been paramount.

Regarding geometry, the human mind and eye has always been attracted to this type of mathematical order. Physicist and writer F. David Peat argues that geometry carries some "of the deepest as well as the earliest ways of understanding ourselves and the cosmos are expressed in geometrical patterns such as the mandala, sacred hoop, four directions, world tree […]."[22] Furthermore, humans possess a geometrical comprehension of the world which finds expression in our common language. "Indeed, spatial imagery seems particularly appropriate; after all, we tend to use spatial metaphors when talking about our inner life; we are 'up in the air', 'in a strange space', 'losing direction', 'following a pat' and 'becoming disoriented'."[23] The meaning of geometry, in fact, comes from the Greek root *geo* which means earth and from the Greek root *metron,* which signifies measure. Thus, geometry literally denotes the process of measuring earth.

In this attempt to mathematically understand reality, Euclidean geometry has a significant influence as this mathematical system "idealizes forms. Triangles and squares are made with straight lines; the shapes of circles are smooth and regular. It defines space in terms of discrete dimension–the zero-dimensional point, the one-dimensional line, the two-dimensional plane, the

[18] Steyerl, 2012, 14.
[19] Steyerl, 2012, 18.
[20] Bradley, 2010, http://www.stsci.edu/~lbradley/seminar/chaos.html Accessed August 1st, 2017.
[21] Rothstein, 2015, 76.
[22] http://www.fdavidpeat.com/bibliography/essays/oril.htm Accessed April 20th, 2017.
[23] http://www.fdavidpeat.com/bibliography/essays/oril.htm8 Accessed April 20th, 2017.

three-dimensional solid."[24] The abstraction of the world into well-defined shapes such as triangles, squares, circles allowed humans to understand the universe and it became the way we actually construct physically and mentally our living space.

Drone photographs render a kind of space that, at first glance, seems to be ruled by Euclidean geometry. The geometric accent that drone vision draws on space conveys the idea of an organized space (Fig. 10). They bring about a spatial reproduction ruled by a sense of mathematical order and by some kind of graspable and measurable logic. This potentially explains why vertical views are used as a tool for mapping the planet. After all, maps are visual abstractions of our living and outer space, which are created to make visible specific information and spatial relations. Could the vertical view provided by drone photography become the reigning mode of seeing, and capable of measuring the world? If linear perspective dating back to the Renaissance has been the ruling paradigm for representing the world as a mathematical organized and measurable space, could drone's view be the new ruling mode for representing reality, thus, measuring it? Are the skies our new ground from which to see and tame space?

The vast proliferation of God's eye view provided not only by drones and airplanes, but also by satellites seems to affirm the former interrogation. Applications such as Google Earth are examples of how people in daily life are now seeing the world from above. These applications attempt to render information into visible terms in which a vertical view of the world plays a major role in trying to tame our space. However, "Aerial photography's conquest of the previously unseen is thus paradoxical for aerial visibility incited invisibility, the legibility of the images was always threatened by their illegibility, and the seeking always productive of a hiding."[25]

Regarding verticality, Dorrian underlines in his article on "Google Earth" that aerial vertical views have a tendency to turn space into some type of graphical image of the planet.[26] The same principle can be applied to drone photographs. The spatial abstraction produced by these flying cameras represent fragments of our living space as some kind of graphical flat surface. Thus, conveying a sense of decipherable geography. Nonetheless, a paradox is yielded by the fact that despite the sense of geometry, the space depicted is rather disorienting.

[24] Briggs, 1992, 158.
[25] Amad, 2012, 83.
[26] Dorrian, 2013, 295.

Regarding this perspective for mapping purposes, Laura Kurgan states that the contemporary vertical view "disorients under the banner of orientation."[27]

With the loss of the horizon, the shapes of things and figures in space are rendered very geometric and their relation in the space vanishes (Fig. 10). The space depicted is suddenly deprived of its traditional perspective, shattering previous modes of seeing. With no horizon line, the viewer is deprived of a stable standpoint and of a firm ground in which to stand on. As viewers, we no longer have a precise vanishing point that can provide direction to the sight. To the Western eye used to being guided by traditional perspectives, spatial configuration turns into chaos and the eye drifts within the image in the pursuit of knowing what exactly it is beholding. "Without a true focal point, the observer could wander around in a permeable space."[28]

Linear perspective has a long tradition in Western culture as it has been the reigning model of representing the world since the Italian Renaissance. Its influence is such that society takes it for granted and no longer questions its illusory realism. However, there is nothing natural about linear perspective for several reasons. This perspective is achieved through a mathematical operation in order to project a three-dimensional space onto a two-dimensional surface. In order to convey illusion of depth, some abstractions and annihilations have to be made. Hito Steyerl in her text devoted to vertical perspectives, affirms that to begin with, linear perspective negates the existence of the earth's curvature. Likewise, a completely flat and abstract horizon is envisaged and most important "the construction of linear perspective declares the view of a one-eyed and immobile spectator as a norm […] it computes a mathematical, flattened, infinite, continuous and homogeneous space, and declares it to be reality."[29]

Due to its realism and mathematical operation, this way of representing space bears the authority of being objective. To call it an objective means that it denies possible subjective perspectives. In a certain sense, however, it does so by conceiving an immobile spectator and locating the subject outside of the represented space. Hence, the importance of the term "perspective," which comes from Latin *perspicere*, to see through. "Linear perspective creates the illusion of a quasi-natural view to the outside, as if the image plane was a window onto the real world."[30] This paradigm in representation renders the world as a mathematically organized

[27] Toscano, 2015, 6.
[28] Adey, 2013, 334.
[29] Steyerl, 2012, 18.
[30] Steyerl, 2012, 18.

spatial configuration in which objects seem to be contained by space. By breaking linear perspective through a vertical angle, we are literally breaking the window to this mathematic configuration of space.

Among the many reflections that pilot and writer Antoine de Saint-Exupéry left in 1942 of his aerial adventures, there is one that clearly illustrates the visual chaos that emerges from a vertical view. From the pilot's point of view, in which Saint-Exupéry was able to envisage a horizon, he wrote: "I see clouds, sea, rivers, mountains, sun. I see roughly and get ... a general impression [Je me fais une ideé d'ensemble])."[31] Conversely, for the man who used to be the writer's companion and who sat behind the pilot seat, the view was different as he saw the world from a completely vertical view. "He sees lots of things –lorries, barges, tanks, soldiers, cannon, horses, railway stations, trains, station masters. It is the difference between seeing 'one' and seeing many things, with the many tending toward a vertiginous itemization of a series of objects shorn of any 'natural' coherence."[32]

The unified, humanist vision of space is broken and a disjointed space is yielded by drone's aerial vision. Our mathematical conception and linear understanding of space and figures is paused. By doing so, the figures depicted in the photograph become floating objects all randomly scattered in space (Fig. 10, 12). It can be stated that if linear perspective gives the impression of space containing the objects, a non-perspectival point of view works differently, re-configuring the common logic between space and objects/subjects. From a God's eye view, it seems that a contraction of space takes place by pressing together all figures. By doing so, all the figures depicted are densified and, in this process, open-space is emptied (Fig. 13). In other words, vertical views picture the world below as one full matter, and there is no sense of empty space between figures and surroundings. Animals, humans and objects seem to form a material amalgam with space due to the loss of horizon (Fig. 10). Figures and space are presented inseparable and non-detachable. Despite the fact that drone's vertical vision yields a picture of the world in which all elements form a material amalgam, the unity of all the elements in the image becomes random. However, this randomness may allow the viewer to find new relations among the figures in the photographed space.

[31] Saint-Exupéry, 1942, 117.
[32] Dorrian, 2009, 91.

Fragmentation: pieces of a big jigsaw puzzle

The aerial images of the *Blue Marble* taken during the Apollo mission presented earth as a globe all suspended in the immense black space. For the first time, humanity was able to see the circle-like limits of our planet. To picture our living space as a sphere showed a "unified and perhaps even redeemed world purged of conflict, a planet that could be thought of as a single organism."[33] Aerial views taken from a drone show instead fragments of a vast territory. In regards to virtual programs like Google Earth, Dorrian states that each image appears as a part of a constructed patchwork.[34] In the case of vernacular drone photography, every photograph taken at a vertical view seems to be a small piece of a big jigsaw puzzle. The image is now part of a whole that has been fragmented and torn into pieces.

If vertical views taken from the Apollo mission were able to present a sublime quality in which the vastness of the black space put forward the fragility of our planet, this sublime quality have to be reconsidered in drone vision. In his article "The Aerial Image: Vertigo, Transparency and Miniaturization", Dorrian reflects upon the failure of the sublime effect related to the aerial views: "[…] I am here more concerned with what happens when it [sublime effect] fails, and instead of the grounding, recentring operation of these ideas of reason, we are left with a radical groundlessness in which immensity does not open onto transcendence, but instead plunges us into a swarming, swirling mass of things and we end up with something much less dignified than the sublime."[35]

Perhaps this "less dignified sublime effect" that the author underlines is produced by the fact that our living space is not presented as a totality or as a whole entity. Instead, we are offered a fragment, a portion, a visual fraction of a dense material space in which figures have lost their evident spatial relationship between each other. Hence, drone vernacular photography pictures a space quite alienated, chaotic and also a rather ambiguous one.

When looking at these drone pictures there is hardly any particular information that can be recognizable. It is difficult to recognize any specific people or place, and even events can be misinterpreted. In his series *Blue Sky Days* (2015), Van Houtryve focuses on questioning the veracity of drone vision. In this work, he portrays people from a drone in different situations. What is striking about these photographs is how events can be confused, especially in one image

[33] Dorrian, 2013, 290.
[34] Dorrian, 2013, 298.
[35] Dorrian, 2009, 88.

in which people are taking a yoga class in the park (Fig. 14). There are mats on the grass as well as subjects in child's pose; both aspects confuse the viewer by making him or her to see people praying. By taking this picture and asking people what they saw, Van Houtryve "wanted to bring up, the sort of ambiguity that he thinks we should worry about."[36] Thus, drone vertical views carry several complexities, for example, "urban entities are identifiable, but can appear almost interchangeable; their structural sameness blurs any distinguishing features."[37] This puts into question the truth claims that have been posited on these views as several limitations have been brought to light, like in the case of Van Houtryve; critics which argue that the often-assumed transparency of god's eye views is "engaged in architecture of myth-making."[38]

The same ambiguity can be visualized in vernacular drone photography. By looking at multiple drone photographs available on the web and social media, viewers know but little about the places, people or even buildings depicted, and their spatial coherence in the photographed space. Vertical views possess a high degree of obfuscation as the top of the subjects and figures are the only remaining visible parts. There is indeed a low transparency degree in these views which increases the opacity and the legibility of the photographed space and, ultimately, enhances the sense of chaos in spatial representation.

Integrating order and chaos. Fractalist vision

The fact that vertical views, by distancing off the ground, produce an abstract image in which all that is depicted becomes a type of geometric nature visually compensates the chaos produced by the lack of perspective and transparency of drone images. Even the organic lines of nature are visually abstracted when beholding a landscape from a vertical angle. If the distribution and coherence is broken at the moment when the horizon line is gone, other kind of spatial relations and patterns may emerge from a God's eye view. One in which chaos and order could exist.

Writer John Briggs stresses that in Euclidean geometry forms are idealized. Curve lines become perfectly delineated and lines are depicted straight by following this mathematical system; a system which according to the author, works perfectly to organize our urban planning. Nevertheless, "Applied to the shapes and motions […] Euclid provided a less satisfactory grasp

[36] http://dronecenter.bard.edu/interview-tomas-van-houtryve/ Accessed April 6th, 2017.
[37] Dorrian, 2013, 54.
[38] Toscano, 2015, 13.

of the tousled, craggy, crinkly continuum of the non-human world."[39] Arguably, it cannot be fully satisfactory to the human world either.

For comprehending other spatial relations–other than regular ones–Briggs explains that fractal geometry can be applied in order to visualize and, hence, understand more dynamic systems and non-regular shapes, like the ones in nature. This mathematical field was invented in the 1970's by Benoit Mandelbrot and is considered as a type of mathematical language that conflates order and chaos. In Mandelbrot's own words, he wanted to create a geometry for things which have no geometry.[40] It is a "geometry that focuses on dynamic movement, ragged lines and space so crumpled"[41], and thus, non-linear. Furthermore, it provides "a workable new middle ground between the excessive geometric order or Euclid and the geometric chaos of roughness and fragmentation."[42]

Fractals can be found all over nature, they are in trees, broccoli, a peacock's feather, plants etc. (Fig. 15). When analyzing fractal geometry, it can be noticed that it is not composed by stable regular shapes. What makes them alike is the principle of self-similarity they share in which scaling plays a fundamental role[43] (Fig. 16). Repetition and randomness also are part of this geometry of the roughness. This randomness can be introduced in fractals while transforming the structure of the fractal. In this sense, the three principles that rule fractals are scaling, self-similarity and randomness.

Briggs explains that the gaze can learn to see in a fractalist way. In order to explain this, the author quotes the work of museum curator Klaus Ottoman who in the year 1989 presented the *Strange Attractors: The Spectacle of Chaos* whose main goal was to display artworks ruled by a fractalist vision. Regarding this, Ottoman claimed: "Watch for the presence of any one of the three attributes of fractals (scaling, self-similarity and randomness) to determine whether fractalist vision is at work. […] The very simultaneity of order and disorder in the images included in this exhibition is something new."[44] Taking into consideration these three elements, could not they be applied to understand the spatial representation that vertical views provide?

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[39] Briggs, 1992, 158.
[40] Mandelbrot, 2010. https://www.ted.com/talks/benoit_mandelbrot_fractals_the_art_of_roughness?language=es Accessed May 3rd, 2017.
[41] Briggs, 1992, 158.
[42] Mandelbrot, 1989, 3.
[43] Scale is an issue that will be thoroughly analyzed and elaborated on the second chapter.
[44] Briggs, 1992, 158.

Could this fractal vision be another way to tame the roughness and irregularity of our living space?

As aforementioned, in vertical views the figures take a geometric shape while their distribution in space seems quite random. This sense of geometry makes them look similar. This similarity reveals at times a type of pattern. This phenomenon can be applied both in drone photographs of urban or natural landscapes (Fig. 10). By comparing fractals to drone vernacular photography there is a representational similarity that puts forward the following question: Is the drone producing a fractalist vision of the world or are we humans constructing our world according to fractal geometry in which chaos and order may work together?

Mexican photographer and filmmaker René Rivas is already creating some video art pieces in which he inserts vertical views of different cities, taken by a drone, into a video that is continuously looping and randomly fragmenting the image (Fig. 17). The result is a fractalist vision of the city. Other pieces of his work show a cityscape that, due to the vertical angle and random fragmentation, take the form of a mandala. Whatever the result is, there is a fractal understanding of space, provided by the drone, in Rivas's work. It exists as a geometry that is put into motion within the chaos that emerges when we look down and behold the world we live in.

The quest of exploring and conquering new spaces seems inherent to human kind. The sky has represented that other territory where human beings have invested various forms of effort in order to reach it and see the world from above. From this desire, aerial photography arouse and since its invention, this practice has shown its plasticity as it has experimented with many technological changes that inherently entail representation issues in the way space is photographically captured. The advent of drone has definitely transformed aerial images.

To be able to observe and photographically capture the world from a spot where human beings are not meant to exist, certainly influences the way in which we perceive our living space. As was demonstrated, linear perspective attempts to mimic human vision by translating a three-dimensional space into two dimensions. However, drone vernacular photography shows a tendency to voluntarily get rid of perspectival rules. Thus, contrary to some truth claims posited to drone vision, these images yield a rather disorienting spatial representation that on the one hand, seems very detailed and geometric, but on the other hand, is quite chaotic. Additionally,

verticality produces a compression of the space in a process that seems to empty the space in itself.

Drone photography, therefore, produces a rather ambiguous and fragmented spatial representation which challenges the intelligibility of the spatial configuration of the image. Despite this complexity in terms of the image's legibility, the God's eye view keeps proliferating in drone photography in which the language of fractalist vision can be a path to understand the conflation between chaos and geometry in the represented space. However, it will need a trained eye in order to decipher the new geographies that drone verticality are generating. Even if these images have been used to map our living space, it becomes evident that the so-called realism of photography is very dependent on linear perspective. The binomial geometry and chaos revealed by drone photography gives rise to the doubt of whether the order of the depicted space is "arising from chaos, or is it order just going into chaos?"[45]

It can be concluded that the new views from above may impose–as linear perspective did–the new standards for representing our world and identify new spatial relations and configurations where chaos and geometry seem to visually coexist. If the linear perspective was a humanist vision in the sense that it tried to replicate the physical world seen by the human eye, then a vertical view–which can only be attained by a machine– it is a rather machine-like vision of our living space. Finally, if viewers learn to interpret visual chaos as an aspect that is inherent to life and nature, instead of only focusing in its intelligibility, it can be a path to humanize drone's vertical vision. If perfect and well-defined shapes do not exist in nature, then chaos can mean that space is alive. "Chaos often breeds life, when order breeds habit."[46]

[45] Briggs, 1992, 161.
[46] Henry Adams in Bradley, 2010, http://www.stsci.edu/~lbradley/seminar/chaos.html Accessed August 1st, 2017.

2. A miniature world. Scale and drone photography

"Faced with an accelerating rationalization, specialization, and
disintegration of the sense of a social totality, the
subject clings to the hope of simulacra of wholeness."
– Mary Ann Doane

Photography historian Olivier Lugon states in his essay "On Scale" that "Scale is one of the most central and neglected issued of photography theory."[47] He stresses that over one hundred years, theory has shown a tendency to overlook the importance of scale by giving to photography's reproducibility the fundamental role of this medium. However, the relationship between photography and scale has existed since the dawn of this medium. After all, from the moment someone or something is being photographed, an operation of scale is already performed by the camera.

Drone vernacular photography has given rise to the proliferation of vertical views. Along with this, issues of scale in photographic representation can arise through miniaturization. In the article "Adventure on the Vertical", Mark Dorrian expresses that an elevated viewpoint tends to diminish the scale of things. It visually works as the effect that emerges when looking through a microscope but instead of magnifying, aerial views do the contrary. To elaborate on this, Dorrian analyses the film *Powers of Ten* (1977), directed by Charles and Ray Eames (Fig. 18). The particularity of this work relies in the way in which a vertical perspective can stress scale's relativity. The magnification and miniaturization of scale has an effect as if the camera was accelerating and decelerating in and outer space. This interplay between magnification and miniaturization, according to Dorrian, reactivates "ideas of micro-macro correspondence."[48] In this sense, in which way does the process of miniaturization in drone vernacular photography activate ideas of micro/macro correspondence and what are the consequences of this interplay for understanding the contents of these images?

The argument in this chapter begins by explaining what the definitions of scale are and how this practice is applied in everyday life. Afterwards, some ideas regarding scale and cinema are elaborated in order to put forward the complexities of scaling. To draw some insights about how relative scale can be, arguments by media theorist Mary Ann Doane are taken as a basis. By

[47] Lugon in Kee, 2015, 387.
[48] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.

doing so, issues of scale and miniaturization in photographic representation are introduced. The work of several photographers is analyzed in order to stress the limitations of photographic language to reveal the size of things in real life. Finally, this microcosm that drone photography creates is linked to ideas of micro/macro correspondence; a correlation that is historically linked to other modes of observation.

What is scale?

Scale is a concept people do not really reflect upon. Scale is very abstract but at the same time it is something we continuously apply, consciously or unconsciously, in our daily lives. We can see scale in the way cities are built, in sculpture, in photographs, in films; it is everywhere. Scale is applied in sciences like mathematics and astronomy, geography, economics, music, painting and other artistic disciplines, but what is actually scale?

Scale can adopt many definitions. It is defined as "a set of numbers, amounts, etc., used to measure or compare the level of something; the relation between the real size of something and its size on a map, model, or diagram."[49] Scale is also referred to as the "size or level of something; a device for weighing things or people."[50] By comparing such definitions, it can be stated that scale works as a reference point to measure something with respect to another given object. However, the role of scale is less stable than it is thought to be.

Geographer Christopher Lukinbeal questions in his article "Scale. An Unstable Representational Analogy" the role of scale as an ontological given. He argues that there is something schizophrenic in scale as it is a reference point which functions to measure and organize our space but it is rather unstable and possesses an illusory indexical character. For him, scale is a (non)representational practice for it works as a "representative and expressive analogy that compares things based on similarity while hiding their difference."[51] Lukinbeal constructs his argument by stating that scales possess such a high level of abstraction that ultimately left them with "no meaning other than that of sheer convention."[52]

The author identifies two types of scale or ways of measuring. The first kind is related to mathematics. This kind is a quantitative scale defined by numeric values. These values are

[49] http://dictionary.cambridge.org/es/diccionario/ingles/scale Accessed May 18th, 2017.
[50] http://dictionary.cambridge.org/es/diccionario/ingles/scale Accessed May 18th, 2017.
[51] Lukinbeal, 2011, 2.
[52] Lukinbeal, 2011, 2.

basically mathematical abstractions which remove an anthropomorphic quality to scale and by doing so, they pretend to be something that is naturally given. The second kind is linked to anthropometric measures. They are qualitative and, therefore, symbolic. They generally take as a reference point the human body and the subject. Even if both kinds of scale pertain to different realms, Lukinbeal underlines the fact that the two basically abstract the object from reality. In the specific case of anthropometric scales, "Without the body there is no quality to scale, only a representational skin binding spatial organization but blinding us of the fact that this ontogenetic practice is reified as an ontological given."[53]

Scale, then, takes a rather practical but also quite symbolic role in representation. It mostly reinforces realism in representation, thus, strengthening its indexical quality. In achieving visual realism through linear perspective, scale takes a crucial role since it defines a logic relationship between the objects depicted. Scale produces the sense of near and far. Altogether, scale conveys a sense of verisimilitude and coherence within space. However, Lukinbeal stresses the fact that scale is schizophrenic by taking cinema as an example.

He takes up some ideas regarding scale proposed by Mary Ann Doane. In her text *The Close-Up: Scale and Detail in the Cinema*, she addresses the complexities of scale in the filmic field (Fig. 19). Doane builds her argument by taking the close-up as the cinematic element that puts into question the stability of scale. The close-up, as an entity that literally shatters cinematic realism of linear perspective, can visually produce "that a cockroach filmed in close-up appears on the screen one hundred times more formidable than a hundred elephants in medium-long shot."[54] By doing so, the so-often taken for granted stability of scale is gone (Fig. 20), thus emphasizing scale's schizophrenia when it comes to representation. But what is the relationship between photography and scale? Just as cinema, photography also keeps a rather problematic link with scale in multiple ways.

Photography and Scale

Susan Sontag in her publication *On Photography* states that **"**Photographs, which fiddle with the scale of the world, themselves get reduced, blown up, cropped, retouched, doctored, tricked

[53] Lukinbeal, 2011, 3.
[54] Serge Einstein in Doane, 2003, 92.

out."[55] When silver printing was invented in *ca*. 1871,[56] complexities on scale were brought to light as this technique enabled both the miniaturization and enlargement of an image. As Lugon points out in the article "Photography and Scale: Projection, Exhibition, Collection", analog photography's scaling process is twofold. The fist scaling stage happens at the time when we are shooting the picture. That is at the moment of the "production of the negative, which generally implies a miniaturization of the captured objects."[57] The second stage relies on the printing process whereby photographer can make the image size smaller or larger. It can magnify the image of the negative even at a larger scale than the actual size of the objects in real life.

Lugon explains that photography possessed a strong liaison to small-scale images. In the beginning, a photograph was "Made for private viewing, photographs were observed from above in albums, portfolios and books, which had to be held in one's hands or placed on a table. […] This made photography an ideal tool for collecting, since it allowed one to easily archive, compare and visually possess all the objects of the world."[58] If we look back in history, we can confirm that photography was very much related to possession. A quality that Walter Benjamin underlines in his text *A Short History of Photography*: "Every day the need grows more urgent to possess an object in the closest proximity, through a picture or, better, a reproduction."[59] Even today, small-scale photography covers that need for possession. We still carry small pictures of our relatives in our wallets, in our photo albums, in the virtual gallery of our mobile.

Regarding the tendency to save our private photographic gallery in cellphones and tablets, it is worth mentioning the relationship they keep with old and current physical albums in terms of modes of observation. We behold our pictures collected in physical portfolios or photographic publications from a vertical point of view. The same happens with mobile electronic devices. As users of these devices, we have a tendency to view our digital photographs from above. Differently to what is normally encountered by the audience within the wall of a

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[55] Sontag, 2008, 4.
[56] Dusan C. Stulik explains in the text *Silver gelatin* that the invention of silver printing cannot be credited to one person since many were the people involved in the development in this process. Among them were several inventors, including Peter Mawdsley, Josef Marie Eder, Giuseppe Pizzighelli, and Sir William de Wiveleslie Abney. However, the author underlines that the principles of this invention can be traced back to the year 1866, when the baryta layer was introduced by José Martinez-Sanchez and Jean Laurent.
https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/atlas_silver_gelatin.pdf Accessed May 17th, 2018.
[57] Lugon, 2015, 146.
[58] Lugon, 2015, 390.
[59] Benjamin, 1972, 20.

museum or a gallery as these places normally display the photographic work on the walls. This mode of exhibiting therefore demands a horizontal mode of observation.

A shift in photographic size happened when the art market began to change. Before 1970's, large photographic prints were related to industry rather than artistry. Large formats were mainly related to advertising and interior decoration while "Smallness became a visual equivalent of the signature, as if a ratio with the negative close to 1:1 would guarantee privileged access to the creative act – the shooting – and so the print could approach what might be a photographic 'original'."[60] However, during the second half of the 1970's, large scale prints took over their status as art.

As Lugon explains, an important shifting moment for photography was the exhibition *Signs of Life: Symbols in the American City* presented at the Renwick Gallery in Washington, DC, in the year 1976. In this exhibition, large prints were displayed. Among the artists that conformed the show were Stephen Shore whose large prints were well-received by the critics. A new generation of photographers began to change the scale of their work. Artists like Cindy Sherman, Jeff Wall, Thomas Struth, Andreas Gursky and Thomas Ruff began to adopt large format prints as a gesture that "involved appropriating the techniques of advertising, commercial imagery, and the mass media in order to confront an art world whose autonomy was being called into question."[61] While a small format was linked to possession, large formats enhanced an immersive quality in photography. Furthermore, printing in a large scale has prompted a rise in the value photography within the art market; a circuit which has been very tough and doubtful about photography's position in the market.[62] Additionally, large-scale pictures were labeled under the name "tableau"; a term which referenced monumental paintings during the nineteenth century.

The advent of digital technologies is putting the issue of photographic scale on the table once again. The development of different screen sizes and their corresponding change in ratio proportions are prompting a miniaturization of photography. A miniaturization process that

[60] Lugon, 2015, 398.
[61] Lugon, 2015, 402.
[62] Photography is still struggling to position itself in the art market. However, Andreas Gursky's work *Rhein II* was sold for $4.3m at Christie's in New York, in November 2011. A price that represents the most expensive in the history of photography and that might represent a shifting moment of photography's value in the market.

might relink photography to possession and modes of consumption.[63] In regards to the shrinking of screens, Doane explains that the pursuit for absorption through gigantic IMAX screens in cinema is not all lost by the small screens. Its absorptive power is now enhanced not by means of magnitude but through the ubiquitous presence of screens in daily life. "[…] it could be said that the screen is not simply enormous, it is everywhere. The inevitable limit to its magnitude is compensated for by its proliferation." [64] Either way, the author underlines how these technologies put forward the way in which scale issues of enormity and miniaturization are tied in cinema. A similar effect is happening with drone photography. The drone and its miniaturizing way of capturing the world, from a vertical angle, arise, though, other issues regarding scale and photographic representation.

From a God's eye view, the world looks as if it were shrinking. When we behold urban or natural landscapes from an elevated vertical view, houses, skyscrapers, people, boats, highways, woods, lakes look unusually miniscule. They seem as if they were part of a model or elements of an architectural maquette (Fig. 21). Drone vernacular photography, with its vertical angles and sharpness, produces a miniaturizing visual effect that at times makes it difficult to discern if the scene depicted is real or artificial. Thus, it diminishes the indexical nature of photography by challenging the viewer's eye.

Drone vernacular photography, by losing linear perspective, loses some kind of human quality. After all, linear perspective mimics the way in which humans view the world. Photographer Tomas van Houtryve describes drone photographs as pictures in which "Everything everywhere looks silent and calm, still and waiting."[65] And perhaps, it takes an eerily serenity at times. The world captured from a drone, renders a very silent and abstract image of our living space. This along with the distortion of scale triggers doubts about the realism of the photographed space. This tension recalls the work of photographer James Casebere.

Casebere's work explores the role of scale in photography by creating miniature models of architectural sets. The artist carefully constructs scenes that are imbued with artifice and realism. He selectively plays with scale and light in order to capture a "realistic" picture of the

[63] It worth mentioning at this point that along with screen's miniaturization, LED monumental screens have also appeared in the market. However, these devices do not have such a strong presence in every-day life. Contrary to what happens with mobiles phones which seems to possess a fundamental role contemporary society.
[64] Doane, 2003, 110.
[65] http://time.com/3627980/drone-country-see-america-from-above/ Accessed May 17th, 2017.

model he is photographing. Specifically, his series *In Landscape with Houses (Dutchess County, NY, 2009*) (Fig. 22), he recreates an American suburb which seems at a times a familiar scene but it also awakes a sense of abandoned. The full set of photographs "evokes feeling of emptiness, and an uncomfortable state of inhumanity."[66] By doing so, Casebere induces the viewer in an illusory manufactured atmosphere in order to question truth claims posited on the photographic medium. "[…] Casebere demonstrates how the nature of truth in the photograph is fully reliant on the intention and perception of the photographer."[67]

Among this series, there is one photograph of the set taken at a vertical angle (Fig. 23). The shapes of figures, along with light and shadows emphasizes its realism. The miniaturizing scale plays a fundamental role in adding a realistic touch to the set. If a comparison be made between the artist's work and a drone photograph, it would be very complex to determine the artificiality of Casebere's work (Fig. 24). In this sense, it can be stated that photographic scale is quite schizophrenic as it makes something real look artificial and something fictional look real.

In terms of photographic representation, the loss of linear perspective emphasizes how much our sense of scale depends upon it. Ergo, drone vernacular photography puts into question the power of the photographic medium to inform about the size of things in reality. Sometimes a car, a man, or an animal captured by the camera can convey a sense of scale. These elements may work as reference points from which we as viewers can determine only approximately the size of all the figures composing the image. Nonetheless, scale is only given by means of comparison and through perspective. Sometimes the image does not display any element that can bring about some sense of scale (Fig. 25).

Photography theorists Helen Westgeest and Hilde Van Gelder in their book *Photography Theory in Historical Perspective: Case Studies from Contemporary Art* take as a case study the photographic series *Things are Queer* (1973) by artist Duane Michals, in order to reflect upon scale and photography. The work shows a series of black and white photographs that all together function as a short narrative sequence. In each picture, scale and framing are two elements with which the artist plays in order to create a multi-layered scene (Fig. 26). By doing so, the viewer's perception of the photographic reality is both disrupted and put to the test. He or she is

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[66] Schirvar, 2014, http://cornellsun.com/2014/09/02/perception-vs-reality-james-caseberes-scales-and-dimensions/ Accessed May 19th, 2017.
[67] Schirvar, 2014, http://cornellsun.com/2014/09/02/perception-vs-reality-james-caseberes-scales-and-dimensions/ Accessed May 19th, 2017.

confronted with a world that at first seems to possess a normal scale. Then, a gigantic foot gets in the picture and in the following photograph, the frame opens up and situates the viewer in a photographic space where miniature and enormity are confronted. As the viewer passes each image, a new photographic reality is revealed by disproving the previous one.

Regarding scale, Westgeest states that Michals's *Things are Queer* "tells about the impossibility to be sure about the real size of what is presented in a photograph […] the series also demonstrates the impossibility to discern the difference between looking at a photograph of something/someone or at a photograph of a photograph of something/someone."[68] The impossibility to convey an exact scale through photography can be seen in the project *Dronestagram* (2012-2015). It was developed by writer and artist James Bridle who pinpoints this issue in an indirect manner. The project aims at giving visibility to drone strikes that occurred during war. Bridle states: "I was reading the reports of drone strikes in undeclared wars, illegal assassinations in Pakistan, Yemen, and Somalia, gathered from eyewitness accounts and local media by the Bureau of Investigative Journalism. But I was struck by the absence of imagery."[69] In order to produce visual material, he searched the localizations where drone strikes took place through Google Earth and Google Maps. After localizing them from a satellite, he took screenshots of these satellite vertical views provided by these programs. He then uploaded them to Instagram under the account name *Dronestagram*. Although the images are not as sharp and detailed as drone photographs, they look like photographs taken by a drone due to the vertical angle (Fig. 27). There are two stages in which the scale of the things depicted are problematized. The first one relies on the fact that as a vertical view, all the elements depicted are very small. The second one is linked to the miniature size of the cellphone's screen which is normally the device viewers use to log into Instagram. Both elements produce an image that, aside from the written information provided by the author, does not really tell something about the space depicted.

Finally, the work of Michals, Briddle and Casebere are of the upmost importance since they stress how problematic scale can be within photographic representation. By doing so, scale becomes a very abstract reference point that depends on other bodies to take its meaning and become operative. It further becomes a representational operation where even the introduction of

[68] Van Gelder and Westgeest, 2011, 207.
[69] http://www.tate.org.uk/context-comment/articles/art-of-instagram-dronestagram Accessed May 22nd, 2017.

a single object into a photographic space can transform the world into a miniature state. Perhaps, this is one of the reasons why Mark Dorrian states that vertical views produce the effect as if the viewer were plunging into another world.

Vertical views: micro and macro correspondence

Mark Dorrian analyzes in his article "Adventure on the Vertical", the current proliferation of vertical views–enabled by the development of new technologies–as a phenomenon that announces a "cultural boredom with the horizontal, and the corresponding re-orientation of attention onto the vertical, invoked the notion that the view from above—together with its associated technologies—formed a peculiarly modern visual form."[70] The author underlines how this mode of viewing prompts a reduction of the world's scale and reflects upon how this miniaturization establishes new kinds of imaginative transaction which, according to him, revivifies ideas of micro-macro correlation.[71]

Dorrian argues that the reduction of scale produced by an elevation of the view is very much related to the kind of magnifying effect that microscopes perform. The visual power that optical technologies like the microscope have yielded throughout history, relies on their capacity to render visible a hitherto invisible reality to the human eye. Through these devices, our sight has been empowered by revealing other microscopic worlds through the magnification of scale. We have been able to visually identify in a simple drop of water or blood, a whole new world and a myriad of new structures, shapes, relations and patterns. This has caused a fascination within human beings as this ongoing revelation of the microscopic world stimulates imagination by making us deduce "that by some extraordinary trick of relativity the smaller may contain the large."[72] In other words, the discovering of the microscopic world has transformed our sense of scale and, thus has cast our sight by enabling it to merge two spheres: the macrocosm into the microcosm.

It is interesting how human beings throughout history have demonstrated to possess a conception of a macro and micro correspondence. Although experienced in different ways, this idea of a micro-universe containing a macrocosm can be traced back to Plato and can also be found in Buddhism. In Buddhist practices mandalas are created. They are a representation of the

[70] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.
[71] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.
[72] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.

universe itself in which the macro and the micro conflate. Psychologist, Carl Jung, stated once that a mandala symbolizes "a safe refuge of inner reconciliation and wholeness."[73] Writers like William Blake also referred to this interrelation when writing his poem *Auguries of Innocence*: "To see a World in a Grain of Sand / And a Heaven in a Wild Flower / Hold Infinity in the palm of your hand / And Eternity in an hour."[74] If due to these thinkers and religions that the macro/micro correlation took a philosophical and spiritual dimension, today it is linked to science and nature in which optical devices and photography have played a fundamental role. In human's pursuit of bringing to light a microscopic reality that once remained in darkness, sight has been empowered. Likewise, our imagination has been stimulated in a process that entangles a liaison between the visible and the invisible, and between the micro and the macro. Moreover, in searching to represent all kinds of realities into visual terms, photography has played a fundamental role in disjointing our sense of scale.

Proof of this disjunction is the often inability of human sight to distinguish a picture of a microorganism from a landscape. An experiment that puts forward this issue is the project *Macro and Micro?*, an exhibition displayed at Clark University's Traina Center for the Visual and Performing Arts in 2013, and developed by geographer Stephen Young and herpetologist Paul Kelly. The exhibition combines satellite images of sand dunes, glaciers with microscopic images of different sorts (Fig. 28, 29). The aim of this comparative visual journey consists of challenging viewer's perception of scale and, therefore, putting forward the non-representable quality of scale.

The fact that both specialists chose vertical views of earth's surface is not a random choice. As photography theorist Liz Wells states: "Our vision will be changed because we can see the world from unfamiliar viewpoints for instance, through a microscope, from the top of high buildings, from under the sea."[75] But what does looking through a microscope have to do with verticality? It is indeed a vertical view what the observer obtains when looking into a microscope. Sight is literally diving into the magnified microscopic world. The same vertical experience can be linked with how the camera looks downwards by means of a drone or any other flying machine. In fact, writer and pilot Antoine de Saint-Exupéry reflects upon the similarities that emerge when looking down by means of a plane and a microscope. "The view

[73] The Joung Society of UTAH http://jungutah.com/mandalas-symbols-of-the-self/ Accessed June 17th, 2017.
[74] Blake, 1803, https://www.poetryfoundation.org/poems-and-poets/poems/detail/43650 Accessed June 18th, 2017.
[75] Wells, 2004, 19.

afforded through flight, he argues, has 'transformed [us] into physicists [and] biologists' who are now 'able to judge man in cosmic terms, scrutinize him through our portholes as through instruments of the laboratory'."[76]

The writer stresses a crucial relationship between the kind of perspective that an aerial view and a microscope provide. Both, by forcing us to look down, entangle a visual interplay of magnification and miniaturization. "The aerial view and its miniaturizing distanced view of the earth were integrally connected to the microscope and its magnifying and immersed view of the world."[77] It is in this visual integration and correlation between the macro and the micro that our perception of scale is distorted. A distortion in which perception merges microcosm and macrocosm into each other.

Regarding this correlation, film theorist Paula Amad underlines the importance of printing out the miniature aerial photographs in large scale. This possibility, according to her, stimulates the idea of macro-micro correspondence within vertical views. "Aerial images cannot be understood as visually autonomous forms. Militaristic methods of aerial photographic interpretation bluntly manifested this macro-micro connection in that the magnifying glass and print enlarger became essential tools of visual expansion for managing the images' otherwise ungraspable shrinking of the visual field."[78]

In this vein, drone photography's miniaturization is imbricated with the kind of emerging visuality derived from optical devices. Technologies which have shaped our perception of macro and micro correspondence. However, this correlation might be questioned in some drone photographs. It is important to remember that one of the main differences between drones and airplanes is distance. A drone can fly at different heights, and can even stay at a relatively short distance from the ground, a characteristic that determines the visual field of the photograph. In the case of drones, the visual field can be very limited depending on the height from which the photographer decides to elevate the machine. If the height is not too high, the result of the image is rather alienating and makes it difficult to see the image as a part of a whole (Fig. 30).

Amad underlines how the shrinking view of aerial photography was compensated by large scale printing processes. In this regard, it is hard to imagine drone photographers printing all their material in large scale. Most of the material reviewed for this research comes from drone

[76] Antoine de Saint-Exupéry in Amad, 2012, 85.
[77] Amad, 2012, 85.
[78] Amad, 2012, 85.

photographs uploaded to the web, specially, to platforms like Instagram. Scale miniaturization not only comes from a drone's vertical view in itself but it is a process that is multiplied depending on the chosen device whereby viewers look at the image. If the image is visualized on Instagram, for example, another shrinking stage occurs. Visually, image's scale becomes smaller and smaller as if we were zooming in and out the picture–this was an option that was only available for photographers in the past. Thus, this miniaturization performed by both the screen and application's own format, enhances this micro and macro interplay.

Conceiving the microscopic reality as another whole world is very much related to the circular shape of the microscope's lenses. Since this optical device frames the object of observation into a circle, a sense of totality is created. As this mode of observation surrounds this micro dimension in a type of globe–which reminds the shape of our own planet–as viewers we perceive that another "world" is being revealed (Fig. 31). "[…] the notion that what is glimpsed through the microscope is another 'world,' an idea reinforced by the planetary associations of the circular frame of the instrument's scopic field."[79] Thus, this notion enhances the macro-micro correlation not only through microscope views but in vertical views in general, like that of the drone. In regards to the circular shape of the microscope's glass, it is interesting how the lens of the camera is in fact a circle. It does form a circular image at the beginning; however, the camera adapts the image to a quadrangular format, following the usual painting format (Fig. 32). "Because the glass elements in a camera lens are round, lenses project a circular image onto a camera's sensor plane. This projected image circle must be large enough to cover the rectangular sensor […]."[80]

In this regard, Dorrian stresses that this idea of the microscopic image as a threshold to other worlds "stimulates dreams of travel, exploration, and perhaps even conquest of the strange alien landscape, whether the voyager might be imagined as a submariner plunging into the microscopic depths or a planetary explorer."[81] Perhaps, this is the reason why drone photography is recurrently used for travel magazine in which a small-scale process can satisfy both our need to visually consume and tame space. A reduction in scale enables things to be "grasped, assessed and apprehended at a glance'."[82]

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[79] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.
[80] https://photographylife.com/using-nikon-dx-lenses-on-fx-cameras/ Accessed June 16th, 2017.
[81] Dorrian, 2011/12, http://www.cabinetmagazine.org/issues/44/dorrian.php Accessed May 18th, 2017.
[82] Lévi-Strauss, 1966, 23.

Scale, a value often taken for granted, is problematized by the photographic medium in myriad of manners. From the moment the picture is taken, a scale operation is already put into practice. Additionally, scale can be changed through printing and the enlarging process. The development of new technologies and screens is affecting the way in which we observe pictures in a process that is continuously shrinking the image. By analyzing different photographic works, it can be stated that scale is essential to achieve realism in a photograph and, ergo, in building truth claims to the medium. However, as scale is a social construct, it can be tricked, producing uncanny effects in spatial representation that affects viewer's perception of the photographic reality.

By analyzing the miniaturization of space rendered by vertical views provided by drones, it has been identified how small-scale processes unleash imaginative processes which awaken fantasies of wholeness, and macro and micro correspondence. By doing so, the viewer's perception is providing a quality to the image that it might not possess. This idea of the microcosm as a whole world containing the macrocosm is linked to visual forms derived from other miniaturizing distanced vertical views that have emerged in other moments of histories, like that of the microscope. As Paula Amad states: "Aerial images cannot be understood as visually autonomous forms. […] Finally, I want to suggest that this non-isolated relational approach to scale is especially necessary for fully understanding the perhaps more oblique historiographical import of the aerial view."[83] This same principle can be applied to drone photography as its miniaturizing view does not exist alone but it is connected with other visual forms that have awaken our empowering fantasies of render space into visual terms. If once human beings perceive a sense of wholeness in religious and spiritual symbols, now photographs awaken in us this sense of totality.

[83] Amad, 2012, 85.

3. Flatness in drone vernacular photography

"We live in a world where there is more and more information, and less and less meaning."
– Jean Baudrillard

Art historian and photographer Julian Stallabrass conducted an interview with artist and geographer Trevor Paglen. During their conversation, Paglen expresses his position towards the practice of photography: "[…] useless as evidence … I want photography that doesn't just point to something, it actually is that something."[84] His statement is validated when he reveals his artistic inclinations by taking photography to a sculptural level. In other words, Paglen is much more interested in the materiality of photography and printing processes in order to achieve what he desires: to make his photographs become tangible. This remark not only states a critical position towards digital images, but also presents itself as a proper starting point to reflect upon what conforms to the grammar of the photographic language.

In this chapter, flatness in drone vernacular photography will be addressed by a means of a comparison to abstract paintings and past aerial images. Through a historical review of aerial photography, it becomes evident that flatness has been exacerbated by drone vernacular photography. Although art critics have related depthlessness to painting, arguably, flatness can take several meanings within photographic representation. In this sense: what are the consequences of flattened space in drone vernacular photography?

Abstract painting, photographs and flatness

In his article "Notes on Surface: toward a genealogy of flatness", art historian David Joselit states that art history holds a rather ambiguous and intricate discourse when it comes to define the concept of flatness. He builds his argument by stressing that the experience of flattening in representation is not only a simple product of an optical effect which proliferated during modernism and postmodernism. This deflation during modernism, he states, produces an articulation of flatness and depth in which the former, paradoxically, manifests a psychological depth. To illustrate this, Joselit chooses the work of painter Jackson Pollock. He states that

[84] Stallabrass, 2011, 4.

Pollock's famous drip paintings had to sacrifice the illusion of pictorial depth, in order to gain a psychological and emotional profundity (Fig. 33). However, the author adds that this was not something that all people could easily grasp. He quotes Clement Greenberg's review of Pollock's exhibition at Betty Parsons in 1948 where the critic could hear the visitors referring to his abstract works as "wallpaper patterns."[85] It is interesting how abstract painting has been constantly labeled as decorative due to the way in which flatness deprives illusionism. Likewise, the lack of realism that flatness can yield makes it problematic to relate the scene depicted to the reality outside the frame. In the words of film theorist André Bazin, this is known as centripetal force.

In his book *What Is Cinema?*, Bazin states that ""The outer edges of the screen are not, as the technical jargon would seem to imply, the frame of the film image. They are the edges of a piece of masking that shows only a portion of reality. The picture frame polarizes space inwards. On the contrary, what the screen shows us seems to be part of something prolonged indefinitely into the universe. A frame is centripetal, the screen centrifugal."[86] In trying to differentiate cinema from other mediums such as painting and photography, Bazin understands painting as an inward bound medium. This principle can be applied to drone vernacular photography.

The emergent practices of drone photography are allowing photographers to use these "new" flying devices in order to produce abstract aerial images of the earth's surface (Fig. 34). When one compares abstract paintings with drone vernacular photographs, an interesting dialogue regarding flatness is created. Flatness in photography makes photographs put into question the realness of the scene depicted, and ultimately, its meaning. It is important to note however that this is not the first time that photography has been related to painting, nor is it the first time that paintings are being compared to photography as a means to render some theoretical insights about either of the mediums. In their text *Photography and Painting in Multi-Mediating Pictures*, photography theorists Hilde Van Gelder and Helen Westgeest state that "theoretical writing on contemporary visual art production has been increasingly preoccupied with the relationship between photography and painting."[87] With this in mind, the authors begin their reflections by highlighting how photography has been linked to painting since the late nineteenth century until the present day. To confirm this intertwining, they mention the existence

[85] Joselit, 2000, 22.
[86] Bazin, 2005, 166.
[87] Van Gelder and Westgeest, 2009, 121.

of the pictorialist photography movement[88] which followed the guidelines of painting during the nineteenth century (Fig. 35). Likewise, they chose some contemporary photographers that question the so-called specificities of each medium. Van Gelder and Westgeest discuss the case of painter Gerhard Richter who creates paintings that resemble photographs in a process that "bridge the divide between figurative painting and photographic figuration, but also between abstract painting and photographic figuration"[89] (Fig. 36).

For the purpose of this analysis, multi-mediating reflections are quite productive for trying to comprehend how certain categories are often ascribed to a particular medium, which ultimately, end up constituting a quite generic and closed definition of what photography or any other medium can be. This reflection upon multi-mediating and centripetal pictures, along with growth in technological development, have fostered new relations and approaches in the specific case of photography. This can be applied to drone vernacular photography which, as mentioned before, puts forth the issue of photographic flatness.

Flatness in aerial photography before the drone

The profound insights on aerial views that Thomas Baldwin is able to narrate in *Airopaidia: Containing the Narrative of a Balloon Excursion from Chester, the eighth of September, 1785, taken from Minutes made during the Voyage of the experience of flying*, are thoroughly studied by historian Marie Thébaud-Sorger in her text devoted to this author. In it, she gives an account of how Baldwin encountered this loss of relief: "[…] despite the earth being convex, the balloonist perceives himself within a concave space, as if he were inside a bowl and as if the lie of the land were like a miniature painted inside the bowl's rim, while the edges smooth out all around into a linear flatland."[90] From this, it is worth noting the paradox hidden in these lines in which the author describes earth's circular shape while experiencing a flattened space. This paradox is materialized by one of Baldwin's drawings entitled *A view from the balloon at its greatest elevation* (1786), produced after his flight adventures (Fig. 37).[91]

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[88] It was a movement that developed in the late nineteenth century and it tried to promote photography as an art. To achieve this, photographers focused their work in creating beautiful scenes and portraits that could show the expressive character of the photographic medium. Pictorialist photographers employed brushes and different tools and printing technics to add a painterly quality to the images.

[89] Van Gelder and Westgeest, 2009, 124.

[90] Thébaud-Sorger, 2013, 53.

[91] At this point, it seems appropriate to stress the resemblance of his drawing to those vertical views yielded by microscopes and telescopes, and even to the image of *The Blue Marble*.

Since there were no photographic cameras in his era, Baldwin had to turn to drawing to visually manifest his experience. He depicts the aerial view in different shades of greys as a way to add some relief to the already flat yet circular surface. In another one of his drawings, Baldwin shows a zenithal view of the earth as an almost completely flat map; however, he devotes some of his traces to include some clouds. These are elements that, in one way or another, avoid a complete flattening effect (Fig. 38). In some of his reflections, the author even explains how this cloudy atmosphere creates gradations in color, thus yielding visual depth, and also how natural elements like fog and wind trigger an evanescence of attributes that renders the classification and identification of objects problematic. When looking from above, the author states that even though he is able to classify the objects seen in the sky, this classification appears to be very general. He can separate the elements photographed in broad categories, like "woods, bodies of water and dwellings.[92]" More specificities about them are too complex to describe, which implies that in some way, this aerial distancing deprived space of more in depth layers of meaning, resulting in a "flat" description of the scene depicted.

In regards to Baldwin's analysis, it is important to compare his insights to those aerial photographs that would be captured years later. Those pictures taken from cameras attached to pigeons, kites and aerostatic balloons, are still circulating and put forth in one way or another what he drew and wrote. When looking at these pictures, they portray a spatial surface that is somehow struggling between being completely flat or deep. A tension produced by the fact that most of them are not entirely vertical views, and a horizon line still remains on many of them. In some of them, the bowl-like contour that Baldwin pointed out is recognizable (Figs. 39, 40, 41). Clouds are also depicted within the scene which ultimately imply depth. It is interesting that many of these photographs are not sharp or very focused. This imperfection alludes to visual realism as the human eye does not see completely in focus. The reason is that all objects like pigeons, kites and balloons were in constant movement, and not only in one direction but in both directions: horizontally and vertically. In all of these cases, the eye and the camera experienced movements that went upwards and to the sides. This explains one of the reasons why the things did not look as sharp as they may look in other aerial photographs (Fig. 42).

The advent of the airplane, along with the development of better lenses and cameras, changed the way in which aerial views were photographed. Not only did the photographers have

[92] Thébaud-Sorger, 2013, 54.

more control over the shoot, but this new flying machine provided more stability as it could only move horizontally will maintaining the same altitude. By having more stability, the oblique views of the past could now be completely vertical. Thus, this accentuated the photography's flatness. By losing perspective, depth become absent as well (Fig. 43). Although these views were commonly used for geographical and war purposes, aerial photographs were also popularly used for postcards.

In his text "The Aerial View and the *Grands Ensembles*", Frédéric Pousin analyzes how airplane photographs were popularized by being reproduced in postcards. He studies the case of the company CIM which focused its goal to the postcard production since the 1920s. "It was this company that was able to seize the post-war opportunity to produce postcards carrying aerial views."[93] Pousin reflects on how this practice enabled a collaborative work in which pilots and photographers began to merge; something that defines today's photographers role as many of them are actually learning how to pilot drones. He explains that although the ability to take vertical photographs was available, the pilots would avoid these views, as they did not look real due to flatness. For the public, it was difficult to identify the places they were photographing and, hence, they opted for oblique angles that were still following perspectival rules. Therefore, these aerial postcards had to follow two principles: they had to be "oblique views of developments taken at medium altitudes, which reveal urban projects in their various forms and low-altitude shots which capture the detail of urban structure, its facilities and the activities taking place in and around them."[94] These requirements had the purpose of transforming the space photographed into a pure object of consumption, and ultimately, a stereotype.

Pousin states that aerial postcards "seemed to oscillate between photography and painting, or reality and utopia."[95] The statement is interesting in that the author is, on one side, bridging both mediums and, on the other, is relating photography to the dimension of the real and painting to a utopic one. Van Gelder and Westgeest explain that it is a common belief to thinking of photographs as "straight versus painting as constructed"[96]; something that, they argue, does not necessarily happen.

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[93] Pousin, 2013, 269.
[94] Pousin, 2013, 270.
[95] Pousin, 2013, 271.
[96] Van Gelder and Westgeest, 2009, 121.

When comparing these vintage pictures, a sort of depthless surface can be perceived. This emergent flatness may be one of the reasons that caused Pousin to identify painterly qualities within these vintage aerial photographs (Fig. 44, 45). By comparing photography with painting and utopia, the author, in these shots, identifies from above a spatial representation that struggles between being real or artificial, indexical or iconic. In the end, Pousin explains that these postcard aerial images depict a stereotypical vision of cities, and also yield a tension between familiarity and triviality. In the same vein, drone vernacular photography presents painterly properties. The flatness of these images makes it very difficult at times to discern whether it is a painting or a photograph (Fig. 46). What this image shows is in fact a drone photograph. The fact that the eye and the mind relate depthlessness as a part of painting's grammar is due to how art theory has continuously related flatness to painting. Likewise, the abstract level that photographic flatness can produce highlights its centripetal force in that it centers the attention towards the inside of the frame. In a sense drone vernacular photography revolves around the image in itself and not around the outside reality.

Regarding the intermingling of painting and aerial photography, writer and curator A.E. Benenson in his article "Flatness and The War" explains how during World War II, a painter named Colonel John F. Ohmer of The United States Military was in charge of disguising several military bases. He produced large-scale paintings that could trick the enemies' photographic aerial reconnaissance. The author analyses Ohmer's knowledge of photography's optics and how he took advantage of the social meanings that people at that time ascribed to photographs, in order to trick not only the eye but people's minds. The artist produced enormous paintings depicting natural landscapes, which were then installed over the military bases. The paintings, however, did not follow perspectival rules. Very cleverly, what Ohmer did was studying how photography with its mono-focal technology, compresses and squashes space from a bird's eye view. Thus, the results were very flat photography-like paintings (Fig. 47, 48). Benenson concludes that "for Ohmer's paintings to work as camouflage when photographed, he had to assume that despite the apparent unreal flatness of any aerial photograph with a shallow depth of field, the enemy still believed in the literal truth of such photographs."[97]

Although it would be impossible today to trick drone's optics since these devices are connected to an intricate network that can easily detect those paintings, it is important to stress

[97] Benenson, 2012, http://www.baxterst.org/2012/03/03/flatness-and-the-war/ Accessed July 19th, 2017

how vision and beliefs work together productively in Ohmer's fake photographic settings. Likewise, it is worth noting the impossibility of photography itself to portray depth onto a two-dimensional surface from a vertical angle. To illustrate this, Benenson introduces the work *Postcards from Google* (2011-2013) by artist Clement Valla. This series is composed by satellite images taken from Google Earth. All these images have one thing in common: they present anomalies that fail to accommodate 2D photographs in a 3D model (Fig. 49, 50). As the artist states, the photographs of the earth's surface work as a skin[98] for the surface of a Google Earth 3D model. That is why when bridges, slopes or very hilly paths appear, the program fails to reconcile depth with height; thus, demonstrating that "there is no good way to reproduce height/depth from a single bird's-eye view photograph."[99]

These images with their anomalies show how satellite technologies operate and how photography has some representational limits that sometimes are left out because of the meaning viewers deposit on photographs. In the case of Ohmer, he puts forth how humans ascribe beliefs to the photographic medium that shape our perception of images and that sometimes contradict vision. Drone vernacular photography shows both processes. On one hand, these aerial photographs prove that they are unable to convey depth from a God's eye view and on the other, they show how flatness is part of photography's grammar. Furthermore, as these drone images are so flat to the point that they resemble abstract paintings, they somehow put into question the so-called omnipresent powers that have been ascribed to drone visual imagery. When beholding drone vernacular photography, it becomes clear how abstract and alienating can these photographs can be. The flatness that characterizes them makes evident how seeing the world at a vertical angle is far from being all encompassing. The compression of space that this angle provides actually produces many blind spots. This highlights how drone's optics are not as powerful as commonly believed (Fig. 51). Instead, it is the whole network behind these images that makes them somehow omnipresent.

Flatland and drone photography

The spatial depthlessness produced by drone photography turns out to be more pronounced than other views from above. First of all, and as mentioned before, drones can fly at a short distance

[98] Valla, 2012, http://rhizome.org/editorial/2012/jul/31/universal-texture/ Accessed July 19th, 2017.
[99]Benenson, 2012, http://www.baxterst.org/2012/03/03/flatness-and-the-war/ Accessed July 19th, 2017.

from the ground, a characteristic that produces important visual differences. One of them is the fact that from other aerial views, clouds can unavoidably intervene in the scene. This type of cloudy atmosphere creates shadows and also different nuances in the color scale; elements that ultimately translate themselves into visual depth. A very different operation occurs with these unmanned flying machines. In drone photography, everything is always under light; everything is very sharp and unnaturally illuminated. Very rarely are clouds depicted in drone vernacular photography. As there are no blurred areas, there is a sharpness that the human eye does not normally perceive (Figs. 52, 53, 54).

Mark Dorrian draws attention to the issue of light in vertical views in his text on Google Earth. He states that by comparing an image like the one of *The Blue Marble* to those vertical views produced by these programs, earth's surface suddenly is represented as a space very artificially illuminated. He stresses the fact that that the picture taken from the Apollo shows our planet all covered in clouds, and surrounded by the blackness of outer space, in which one side of the earth remains in darkness while the other is illuminated. This emphasizes the fragility of our planet. A very different perception of our living space is conveyed by Google Earth. "Not only clouds […] but also the world ceased to have a dark side and instead we have an entirely illuminated globe. On Google Earth the darkness of night never falls."[100]

The relationship of this with the drones is that these devices cannot fly in poor weather conditions. This technical issue inspired photographer Tom van Houtryve to name his drone photographic series *Blue Sky Days*. The photographer recalls how after a drone strike in Pakistan in 2012, a boy who witnessed and was injured during the attack proclaimed the following: "I no longer love blue skies. […] In fact, I now prefer gray skies. The drones do not fly when the skies are gray."[101] This is one technical reason why almost all drone photographs depict earth's surface illuminated. This quality of light increases the lack of depth in the image, therefore, the space depicted looks somehow artificial. Dorrian explains that the forever illuminated vertical views like those of Google Earth, produce a living space as a "world of always-available proximity"[102] and at the same time, "transforms the world into a strange planet."[103] What Dorrian identifies in vertical views is a kind of paradox consisting of a dichotomy of closeness and alienation. This

[100] Dorrian, 2013, 299.
[101] Statement of the work, http://tomasvh.com/wp-content/uploads/2015/11/2015_Blue_Sky_Days_Press_Book_web.pdf Accessed June 1st, 2017
[102] Dorrian, 2013, 300.
[103] Dorrian, 2013, 300.

paradoxical relation is translated into drone photography with greater intensity as the quality of the image is better and the level of sharpness is higher than satellite images.

It is worth noting that the term flat takes a myriad of definitions. Among them are: "Having a level surface; without raised areas or indentations; calm and without waves; not sloping. Having a broad level surface but little height or depth; shallow; lacking emotion; dull and lifeless; the same in all cases, not varying with changed conditions or in particular cases."[104] It is interesting to note that most of the definitions relate the term to evenness and homogeneity.

When looking at some examples of drone vernacular photography, there is consistency that everything in space is at the same level. There is something in observing the world from a vertical point of view that actually smooths the verticality of our living space, both urban and natural environments. "Unlike oblique views that still allowed the human eye to recognize the depth and scale of the built or natural environment, vertical images taken from a perpendicular position above the earth flattened depth perception."[105] Every figure and element, either objects or subjects, are compressed to the same level within the space's surface. Since all figures are even and positioned at the same ground level, the space is homogeneous. Similarly, drone photographs are also deprived of blurred areas, and no depth is possible, thus increasing a sense of proximity. The perception of closeness, however, is contradicted by a sense of estrangement to which Dorrian previously referred (Figs. 55, 56).

In the previous chapters, the relativity of scale in photography was explained. More specifically, in vertical views, scale becomes problematic as it diminishes photographic realism. By reducing photography's indexicality, the space depicted is perceived as artificial, almost unnatural. Perceiving the earth's surface as a maquette produces a sense of alienation which is taken to a higher level by flatness. As space deflates and becomes nothing but a very sharp, flat surface, our living space becomes somehow estrange to the viewer's eyes.

Up to this point, it is fundamental to differentiate the way in which the world is seen through the camera and the eye. Van Gelder and Westgeest devote part of their insights to the camera's monocular vision and compare it with the eye binocular vision. Photography's vision holds a link to realism to the point that "photographers hardly seemed to bother about the

[104] https://en.oxforddictionaries.com/definition/flat Accessed June 12th, 2017.
[105] Amad, 2012, 79.

difference between monocular seeing of the camera and binocular seeing in real life."[106] The theorists analyze some photographic works that make visible the spatial distortions that the camera performs; distortions which are always present yet unnoticed most of the times. In this sense, drone vernacular photography emphasizes the camera's optical distortions. Likewise, vertical views performed by drones recall that there is something in verticality that produces a compression of space. If flatness can be considered a property of photography, then a kind of photographic vision exists in the sky.

Political theorist Fredric Jameson analyses an emergent flatness in his book *Postmodernism, or, The Cultural Logic of Late Capitalism*. He stresses that "A new kind of flatness or depthlessness, a new kind of superficiality in the most literal sense is perhaps the supreme formal feature of all the postmodernisms […]."[107] The work by Andy Warhol, specifically his series of Marilyn Monroe, is addressed in order to exemplify this flatness. In this series, the artist takes an already existing photograph of the actress and appropriates it by reproducing it and painting all over it. Monroe's features are literally flattened by photographic reproduction's high contrast and Warhol's silkscreen technique. By doing so and by using the language of flatness, the artist managed to articulate how famous subjects like Marilyn Monroe can become "commodified and transformed into their own images."[108] They suffer a process of reification unleashed by the image they create themselves, and they become stereotypes and as David Joselit states: "Stereotypes […] are always both there and not there; they are blank in their generality […] switching off from presence to absence."[109] It is interesting how flatness is used to yield stereotypical images; such idea echoes that of Pousin when describing the cities' aerial views printed in postcards as stereotypes.

Depthlessness, as above mentioned, produces a homogeneous space. Is it not a type of utopia to live in non-hierarchical world? Geographer Doreen Massey reflects upon this concept in her book *For Space*. She agrees that depthlessness posits problems for thinking in a historical fashion as it presents everything in a constant instantaneity. Nonetheless, Massey stresses the fact that this lack of depth also raises difficulties for thinking spatially.[110] Although she links this issue with globalization and politics, there is one idea that is worth emphasizing. The writer

[106] Van Gelder and Westgeest, 2011, 127.
[107] Jameson, 1991, 9.
[108] Jameson, 1991, 13.
[109] Joselit, 2003, 31.
[110] Massey, 2005, 82.

argues that to think of space as Jameson did is to conceive space as static and reduce it to a pure instantaneity. The latter carries several implications towards the dynamic nature of space. "Any assumption of a closed instantaneity not only denies space this essential character of itself constantly becoming, it also denies time its own possibility of complexity/multiplicity."[111] Although she relates her insights on space to globalization, it is interesting to think and visualize how depthless in these terms can eliminate spatial heterogeneity which, according to Massey, translates into a kind of "claustrophobic holism."[112]

If we assess the images captured by drone photography, flatness produces a compression of space and renders a very static homogeneous image of space. By flattening all elements at the same level, the image is not allowing spatial multiplicity. Instead, everything seems equal, but aren´t heterogeneity and multiplicity characteristics of a living space? If both are denied, then a touch of vitality is denied.

It seems appropriate to recall previous definitions of flatness, as one of them relates it to calmness and lifelessness. In the first chapter, photographer Van Hourtryve refers to the drone's eye view as a vision rendering a world picture silent and calm, still. Flatness, then, is also translated into drone photography as an uncanny stillness that is not precisely peaceful to the eye but one that almost borders with uneasiness as all the space depicted suddenly appears unanimated (Fig. 57). Furthermore, this depthlessness confronts perception by making what is real look unreal, a quality that generates a continuous absence and presence of indexicality within the space depicted.

This chapter concludes that there is something uncanny about the flatness that drone vernacular photography depicts. It seems that with the passage of time and the correspondent technological improvements it entails, depthlessness in photography has been enhanced during this process. The drone allows the photographer to have more control over the flying camera while permitting vertical, flat and yet very sharp photographs of the earth's surface. No sense of depth can be perceived out of these images, thus, producing a quite static spatial representation that makes them look like abstract paintings ruled by a centripetal force.

[111] Massey, 2005, 77.
[112] Massey, 2005, 77.

Flatness in drone vernacular photography can be translated as an element that does not allow any psychological or emotional dimensions. It seems that the impossibility of these photographs to convey some sense of depth due to verticality denies them the possibility to possess deeper insights of the spaces depicted. What viewers get instead is a pure flat surface of the photographed area, and nothing more. Unless the spectator is in possession of some geographical or ecological knowledge, no more layers of meaning or affection can be easily found in these drone photographs. Perhaps, this is why there is a field of photography called "flat lay photography" which is basically photography devoted to commercial purposes. What it is interesting is that this type of shot consists of portraying the products at a complete vertical angle. It works perfectly to sell things as they are deprived of depth and, therefore, of any affective dimension. In a sense, they end up being decorative.

What drone photographic imagery comes to show is that a vertical point enhances flatness. By doing so, it yields a particular spatial representation in which all the components of the space become homogeneous, there is no clear hierarchy. As there is no visual hierarchy, the scene looks uncannily still, almost as if it were not life. Thus, reinforcing a centripetal force within these images Finally, flatness produces a reification process of our living space by making it very hard to invest any psychological and emotional profundity to the photographs. In analyzing all these meanings that flatness takes in the photographic language, it seems conveniently adequate, for military purposes, to behold the earth through the drone's vertical position. If at a vertical angle of our living space becomes a flat, still and fictional space with no possible affective dimension, then it is the perfect angle for targeting and annihilating people.

Conclusion

The malleable character of photography has allowed this practice to transform once more the way it captures the world. Today, it is possible to attach a camera to a drone and by doing so, a different vision of the world is being revealed to the human gaze. As it has been demonstrated, drone aerial photography is unfolding a view of the world that is no longer attached to the ground.

Even if nowadays there is more and more research available on warfare and surveillance drones, there is still few visual material coming out of these unmanned aerial systems. What this demonstrates is that even if drone visual imagery has had "more" visibility in the last few years, there remains still a lot of opacity on this issue. Therefore, a lot of speculation and fantasies have surrounded this technology.

What drone vernacular photography comes to show by capturing the world from above, is how verticality has the power to yield a very specific representation of our living space. Representation that day by day keeps spreading through social media and internet. Product of this proliferation of vertical views, is that our continuous contact with these photographs end up shaping and transforming our perception and the meaning we ascribed to our living space.

As it has been elaborated in the former three chapters, there are three elements that stand out from these aerial photographs: geometry/chaos, scale and flatness. All of these elements work together in the photographic medium and perform certain representational operations that put into question the supposedly intelligibility, veracity and all-encompassing qualities of aerial views. Even if these drone aerial photographs may awaken in the viewers a sense of micro/macro correspondence, order, and fantasies for travelling and possession, these desires and perceptions are product of how our vision in Western culture has been shaped through history. By reflecting on said topics through a historical perspective, it can be stated that these aerial images do not work alone but instead, they are part of an extensive evolution that can be traced back since the first time that the man conquered the sky or even earlier, when microscopes enable man to first discover a miniature world that was hitherto unknown to the human eye.

Far from producing a sublime effect, a sense of wholeness, unity or even awakening vulnerability, drone vernacular photography depicts a space in which all the aforementioned characteristics are translated into an effect of alienation that deprives the viewer to connect

emotionally or affectively with drone's aerial images. Likewise, the visual paradoxes it rises such as geometry/chaos reveal a space that is far from being intelligible. The power of verticality to abstract the space into geometric forms adds to these views a stillness that is not precisely comfortable but on the contrary. It is quite unnatural, thus, a bit distressing.

The fact that losing perspective eradicates spatial heterogeneity makes the scene almost look unreal. Beholding the world from a vertical angle implies a spatial compression in which all elements are on the same level. It is indeed an image that evokes some sense of utopian space when in reality, space possess its hierarchies. An utopic view of the world seems to exist in the skies as not only former aerial views were equaled to utopian scenes but even it is known that Le Corbusier's utopian urban planning was strongly inspired during his several flights.[113] At this angle, then, the photographed space becomes quite static and oddly artificial to the point that it all looks unanimated.

In many cases the abstraction and sense of scale is so distorted that the scene resembles more to a painting that to a photograph. In this interplay between being painting or photograph, drone vernacular photography problematizes people's beliefs on what photography is really about. The abstraction that can achieve these images put in conflict popular notions that link photography to "straight and "real", and painting to "constructed." What it is productive about this is that drone aerial photography gives rise to reflections and theoretical insights about the medium in itself. This is a proof that even in 2017, photography is still evolving and challenging our own beliefs of what photography was, is and will be. Ergo, drone vernacular photography forces the viewer to be more critical about what photographs have the power to show.

The need for a trained eye in order to really understand and read the geography of the space depicted from a drone-mounted camera at a vertical angle, is just a sign that the task of knowing something about the place depicted is not as easy as it seems in the photographic medium. If the viewer is not trained in how to interpreting order in chaos, or vice versa, scale and flatness in a photographic image, the image becomes just a medium whereby to awaken our fantasies of possession, travelling or even consumption. In any case, it has been demonstrated that photographs taken from a God's eye view enhances a sense of flatness that problematizes an affective connection with the image. Likewise, it exacerbates a distortion of scale that rises a totality effect and a geometric character that makes the space look artificial. In this process of

[113] Morshed, 2002, 203.

abstraction, spatial compression and miniaturization that drone photography captures, the viewer's perception can be tricked by provoking feelings of possession, detachment and omnipresence. All of which are defining a commercial path for drone photography in daily-life. If viewers learn to think critically about these images in which chaos and scale schizophrenia are signs of life and dynamism, then a God's eye view can decrease its reification qualities and, hence, become more human.

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Illustrations

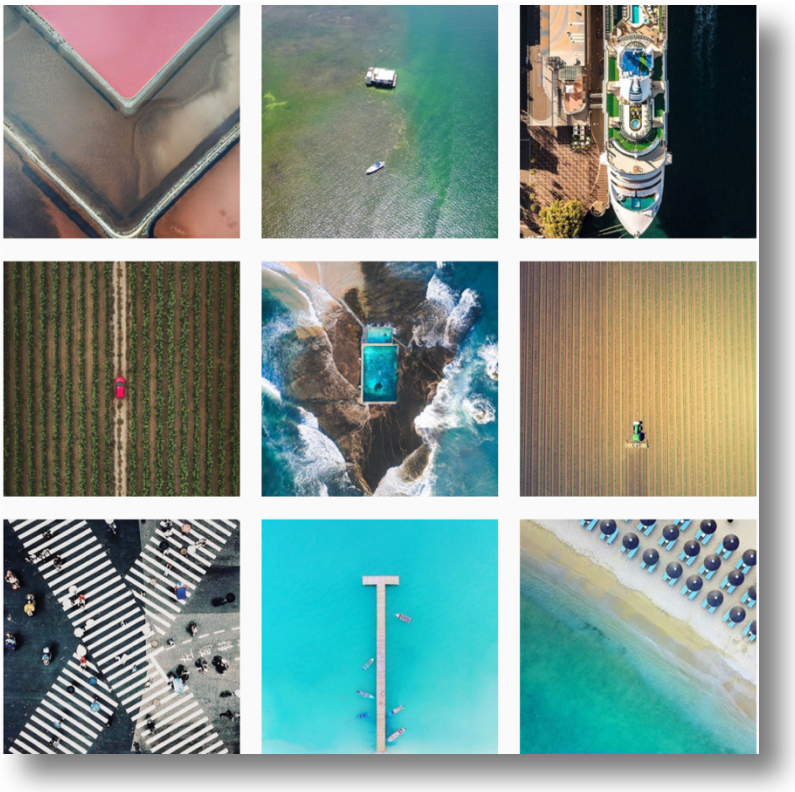

Fig. 1. Drone Aerial Photographs, Caption from DroneMultimedia, Instagram, https://www.instagram.com/dronemultimedia/ Accessed July 31st, 2017

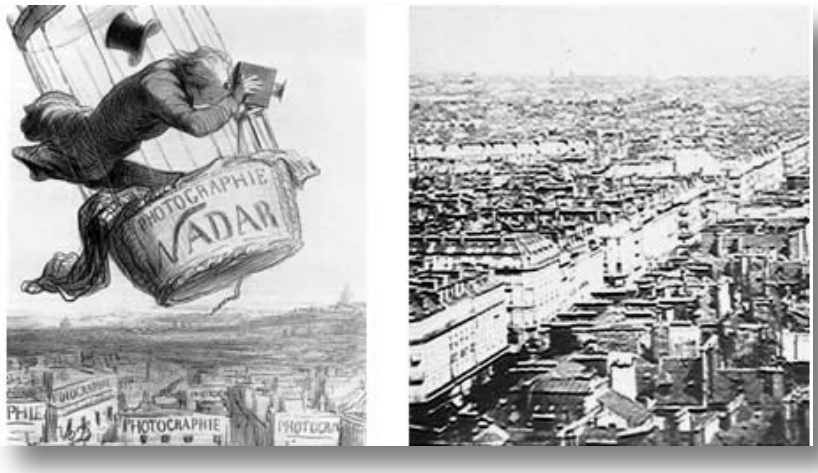

Fig. 2. (left) Honoré Daunier, *Nadar "elevating photography to the condition of art"*, Published in Le Boulevard 25th May, 1862.
(right) Nadar, Nadar's earliest surviving aerial image, Paris, 1866.

Fig. 3. James Wallace Black, *Boston, as the Eagle and the Wild Goose See It*, 1860.

Fig. 4. (Left) Arthur Batut, Batut's ground-level photograph of his photographic kite.
(Center top) Arthur Batut, *Labrugiere*. (Center bottom) George R. Lawrence, *Panoramas of San Francisco after the earthquake and fire*. (Right) George R. Lawrence, *Lawrence's kites*

Fig. 5. Julius Neubronner, *Homme tenant d'une main l'appareil et de l'autre le pigeon*, 1914.
(Bottom) Julius Neubronner, *Vues aériennes de Francfort*, 1908.

Fig. 6 (Left) U.S. Air Force, *Military aerial observer/photographer during World War I*, 1918.
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Fig. 7. Harrison Schmitt, *The Blue Marble*, Earth as seen by Apollo 17, 1972.

Fig. 8. *Debris in low Earth orbit*. Credit: ESA Image courtesy of ESA.

Fig. 9 Georges Gobet, A technician flies the surveillance drone "Helper" and the life buoy during a demonstration of a rescue operation over the beach of Biscarrosse on July 8, 2016.

Fig. 10. Drone Aerial Photograph, Caption from Drone Multimedia, Instagram, https://www.instagram.com/dronemultimedia/ Accessed April 30th, 2017.

Fig. 11. Tomas van Houtryve, *Blue Sky Days* , 2015.

Fig. 12. Drone Aerial Photographs, Caption from Droneoftheday, Instagram, https://www.instagram.com/droneoftheday/ Accessed April 30th, 2017.

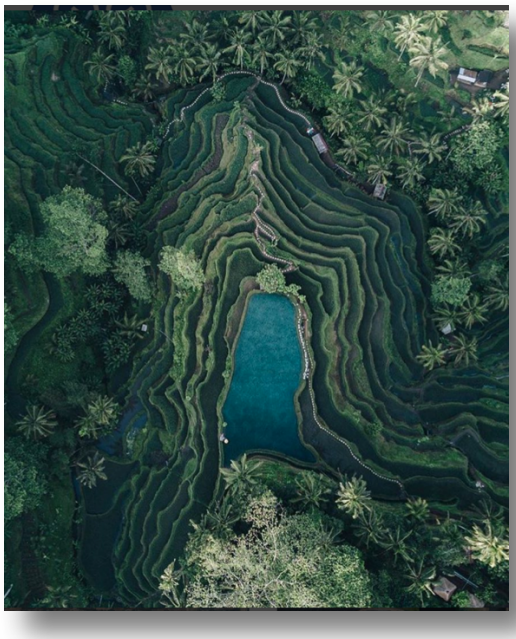

Fig. 13. Drone Aerial Photograph, Caption from Droneoftheday, Instagram, https://www.instagram.com/droneoftheday/ Accessed April 30th, 2017.

Fig. 14. Tomas van Houtryve, *Blue Sky Days* , 2015.

Fig. 15. Kai Schreiber, Detail of an aloe plant. In UC Berkeley's botanical garden, 2003 Fractals in nature.

Fig. 16. Harvard University, *Computer generated fractal*, presented at Texas State Honors Summer Math Camp, July 13, 2004

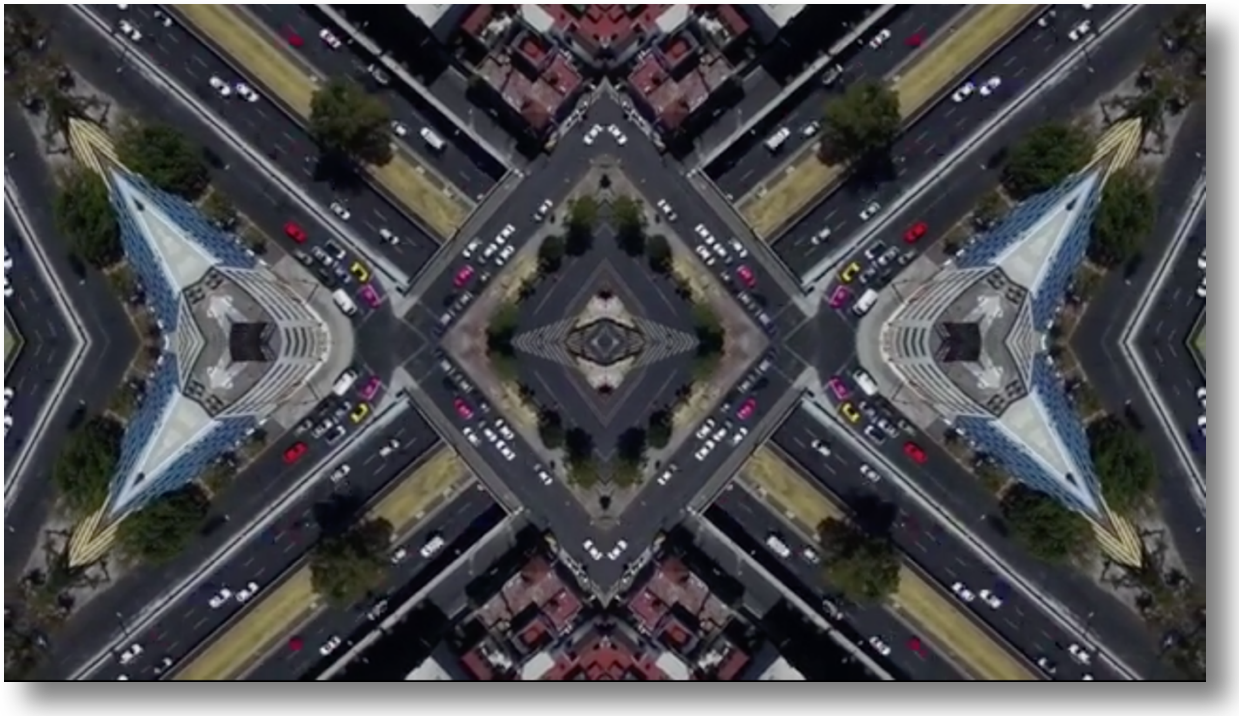

Fig. 17. René Rivas, Still from aerial drone video, Foto Museo Cuatro Caminos, Mexico City, 2017.

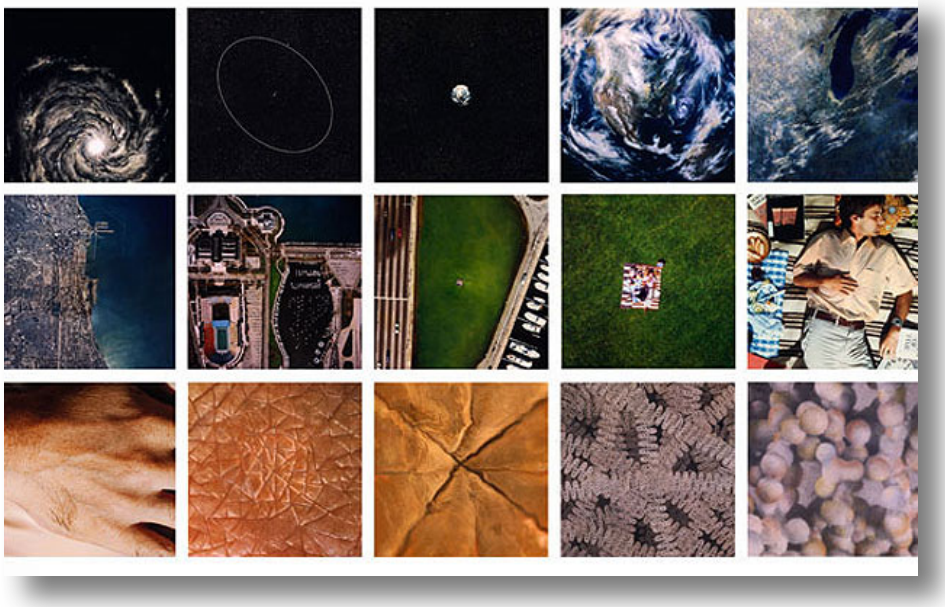

Fig. 18. The Eames Office, *Powers of Ten*, 1977.

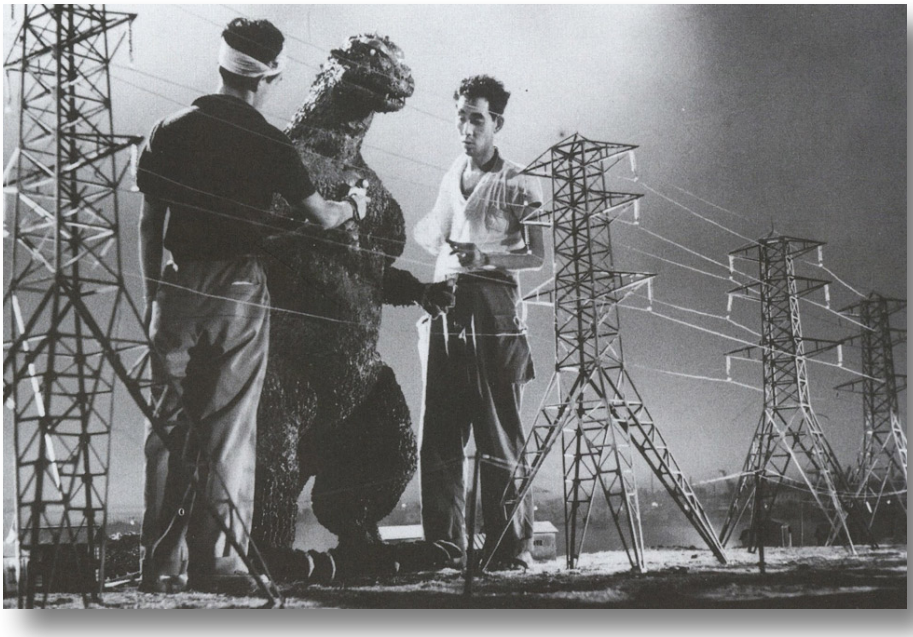

Fig. 19. On the set of *Godzilla* (Gojira) in 1954.

Fig. 20. Ingmar Bergman, Still from film *Persona*, 1966.

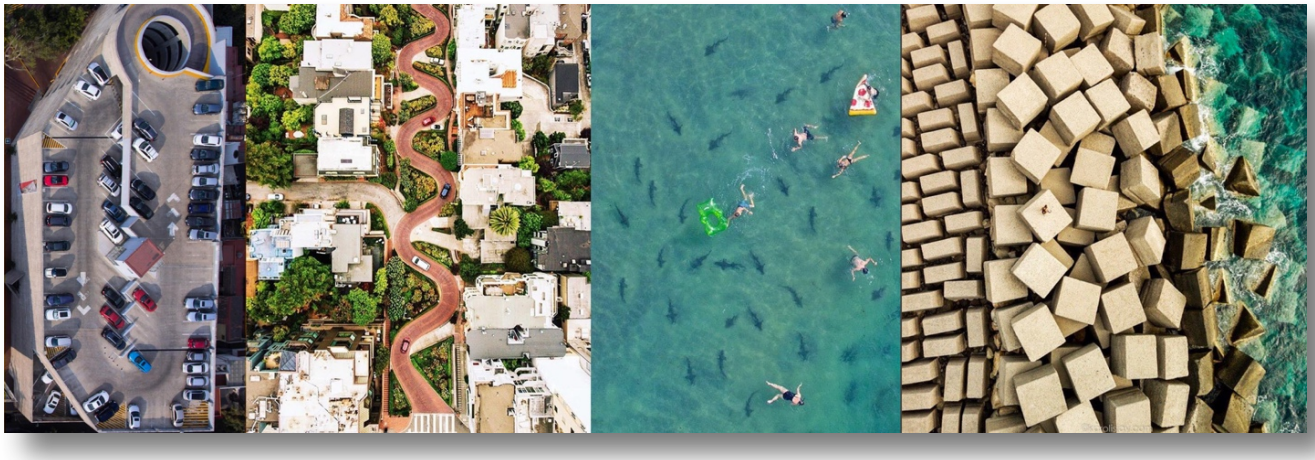

Fig. 21. Drone Aerial Photographs, Captions from Droneooftheday, Instagram https://www.instagram.com/droneoftheday/ 26th February 2017.

Fig. 22. James Casebere , *Landscape with Houses (Dutchess County, NY) #1*, 2009.

Fig. 23. James Casebere , *Landscape with Houses (Dutchess County, NY) #2*, 2009.

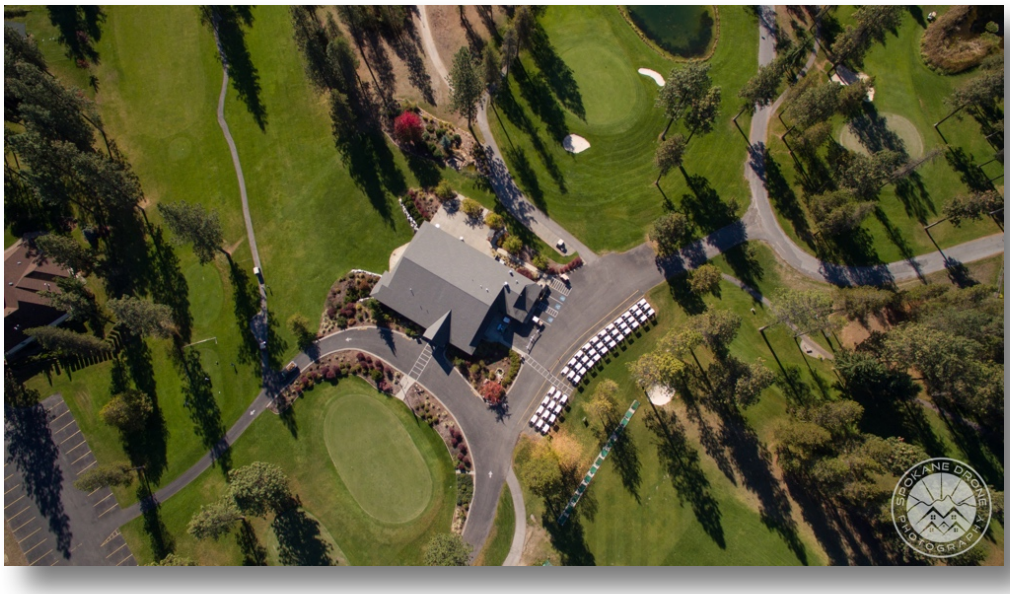

Fig. 24. Spoke Aerial Drone photograph, Dronescape, unknown.

Fig. 25. Drone Aerial Photographs, Captions from Droneooftheday, Instagram https://www.instagram.com/droneoftheday/ Accessed 26th February 2017.

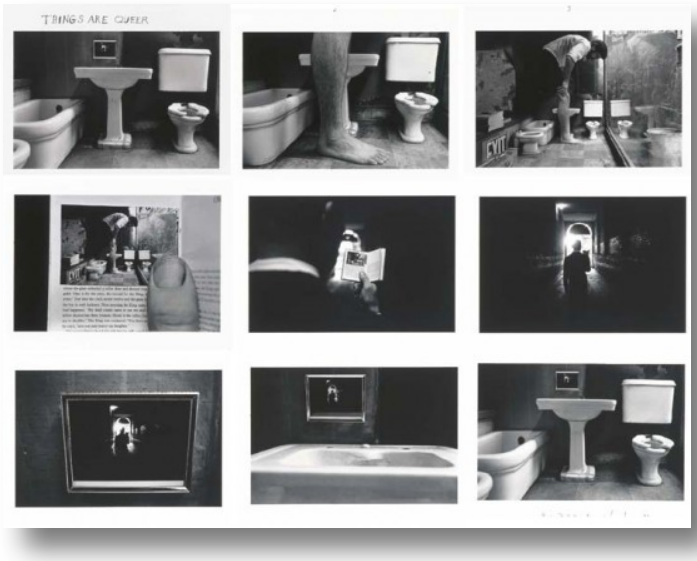

Fig. 26. Duane Michals *Things are queer*, 1972.

Fig. 27. James Bridle, Caption from project *Dronestagram*, Instagram, 2012-2015. https://www.instagram.com/dronestagram/ 26th February 2017.

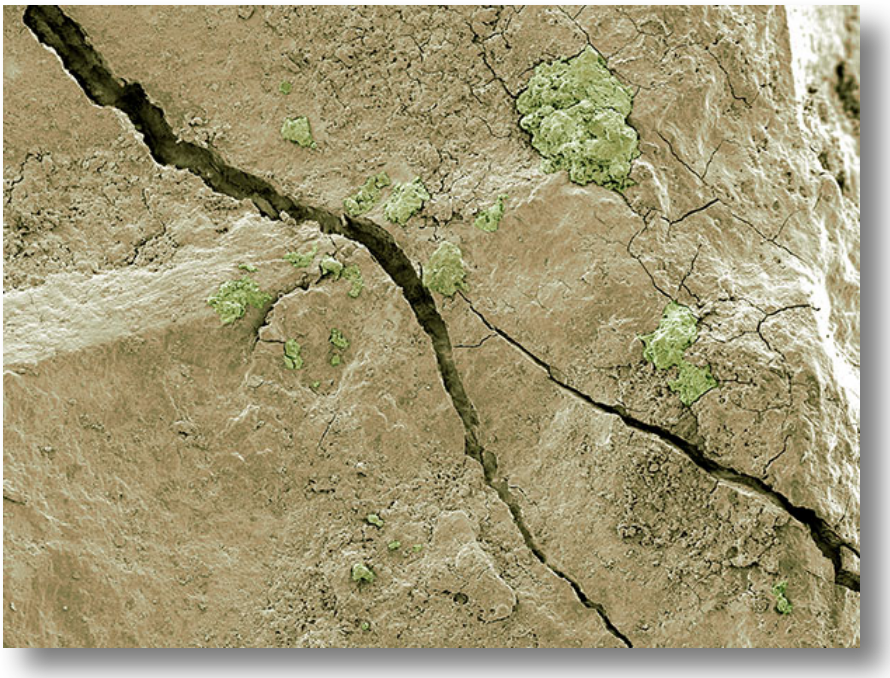

Fig. 28. Paul Kelly, *A rotten human tooth*, 2013,

Fig. 29. Jacques Descloitres, Cumulus clouds over the South Pacific Ocean, 2013.

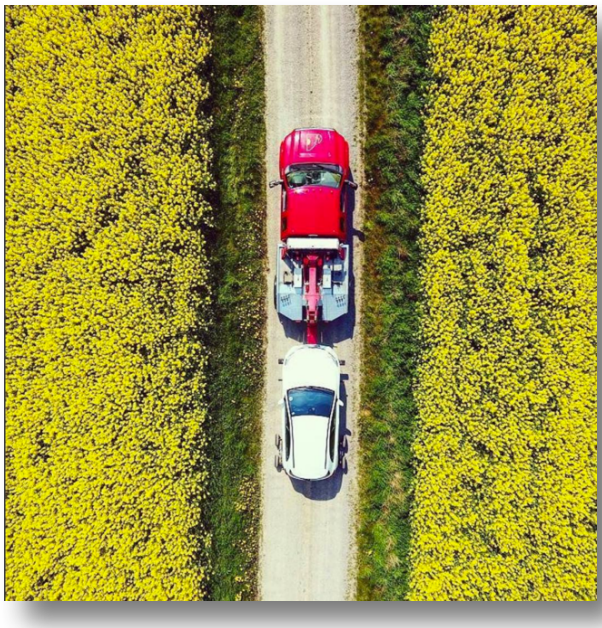

Fig. 30. Drone Aerial Photographs, Captions from Droneooftheday, Instagram https://www.instagram.com/droneoftheday/ 26th February 2017.

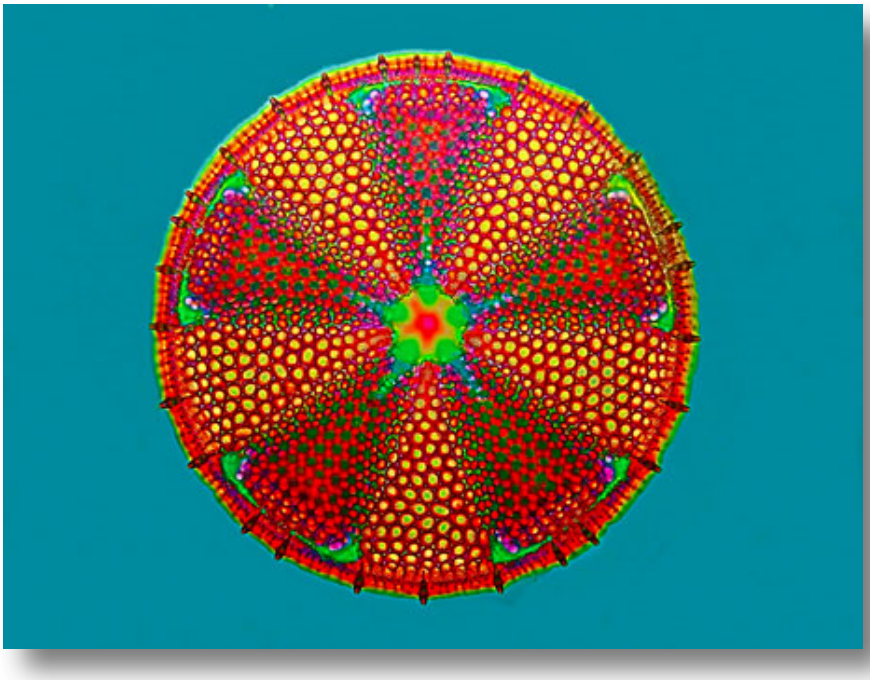

Fig. 31. Stephen Nag,20-million-year-old fossil of an extinct breed of algae, 2008. *courtesy 2008 Olympus BioScapes Digital Imaging Competition*

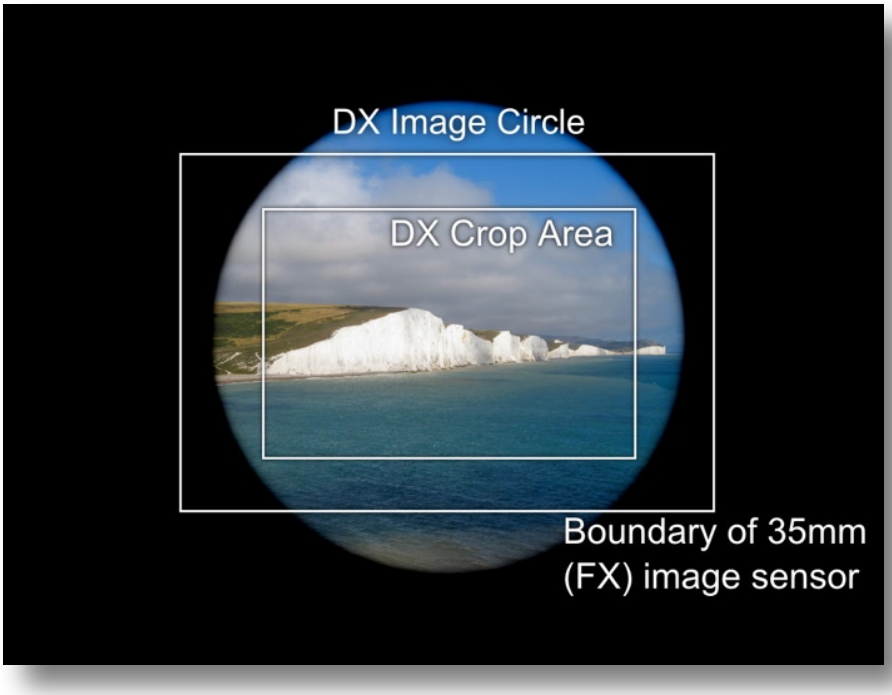

Fig. 32. Circular image produced by a camera lenses by Nikon.

Fig. 33. Jackson Pollock, *Alchemy*, 1947, Oil, aluminum, alkyd enamel paint with sand, pebbles, fibers, and wood on commercially printed fabric.

Fig. 34. Aerial Drone Photographs, Captions from AbstractAerialArt, Instagram. Art. https://www.instagram.com/abstractaerialart/ 27th July, 2017.

Fig. 35. María Santibáñez, *Portrait of Cecilia Siller Falcón*, Saltillo, Coahulia, México, s/f.

Fig. 36. Gerhard Richter, *24.2.98*, 1998, Oil on colour photograph.

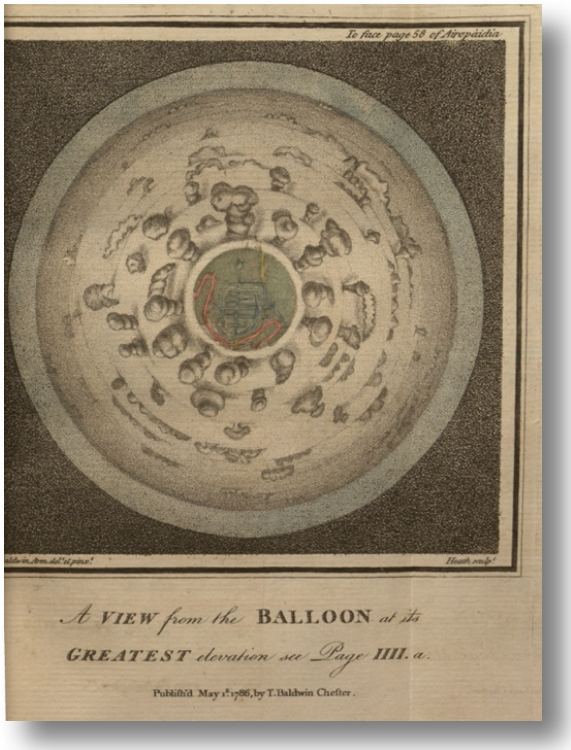

Fig. 37. Thomas Baldwin, *A view from the BALLOON at its GREATEST elevation*, 1786.

Fig. 38. Thomas Baldwin's, *Balloon-Prospect*, featured in Thomas Baldwin's Airopaidia, 1786.

Fig. 39. Arthur Batut, First M. Arthur Batut's aerial photograph taken over Labruguiere, France, late 1880's.

Fig. 40. Julius Neubronner, *Aerial views of Frankfort*, 1908.

Fig. 41. George R. Lawrence, "San Francisco in Ruins. Aerial view of the damage caused by a 7.9-magnitude earthquake that hit San Francisco on May 28, 1906.

Fig. 42. Photographic Section, U.S. Air Service, American Expeditionary Forces (AEF) and Major Edward J. Steichen, A.S.A., Bomb Dropped From Airplane, 191. Loose-leaf album of aerial photographs from the Photographic Section, Air Service, American Expeditionary Forces, World War I. The Art Institute of Chicago, gift of William Kistler

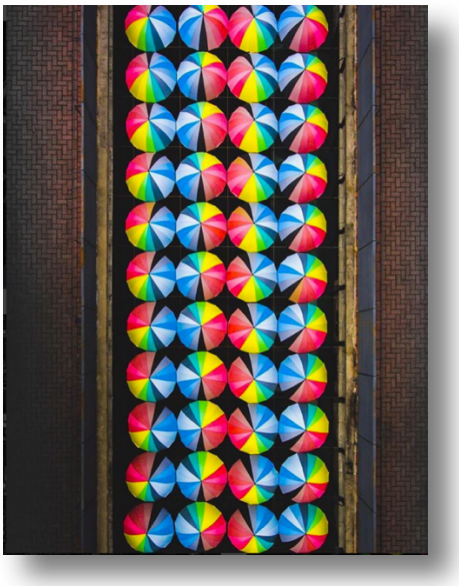

Fig. 43. Aerial Drone Photograph, Caption from AbstractAerialArt, Instagram. Art. https://www.instagram.com/abstractaerialart/ 03 June, 2017.

Fig. 44. Francis E. Price, *Airplane view, showing New Spring Street Viaduct, Atlanta, GA*, ca. 1920.

Fig. 45. Fairchild Aerial Survey, Vintage postcard: Aerial view of Fair Park and Stadium, Dallas, Texas, 1932. Stadium was still known as "Fair Park Stadium" before becoming the "Cotton Bowl" in 1936.

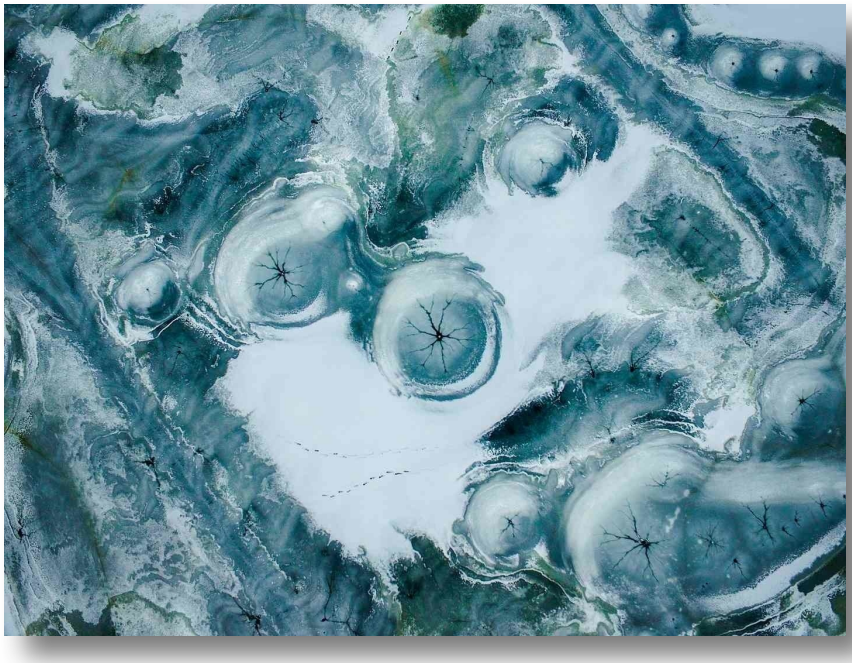

Fig. 46. SkyPixel, *Ice River*, 2017.

Fig. 47. Aerial photograph of the concealed Douglas Airbase (bottom half of photo). http://www.baxterst.org/2012/03/03/flatness-and-the-war/ July 26TH, 2017

Fig. 48. Underside of a tarp (bottom half of photo). http://www.baxterst.org/2012/03/03/flatness-and-the-war/ Accessed July 26TH, 2017.

Fig. 49. Clement Valla, *Postcards from Google Earth* 2011-2013.

Fig. 50. Clement Valla, *Postcards from Google Earth* 2011-2013.

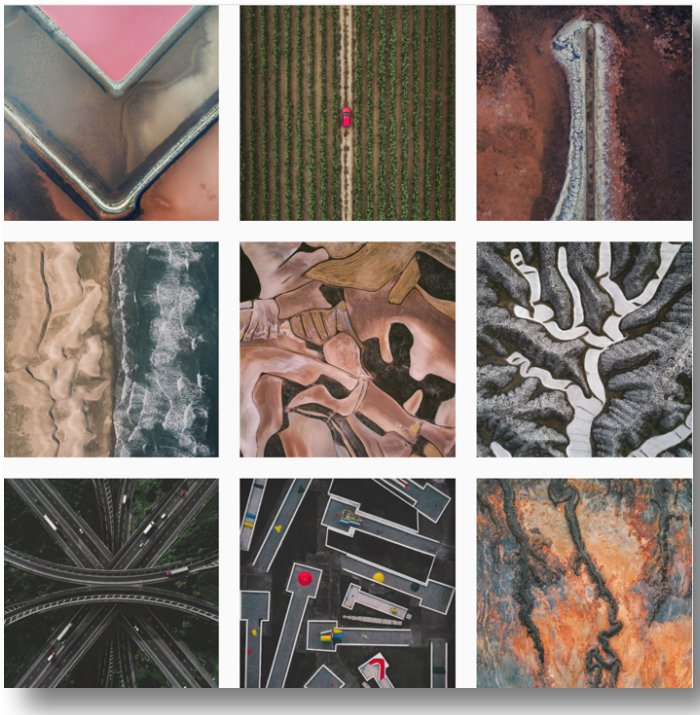

Fig. 51. Aerial Drone Photographs, Captions from Abstract Aerial, Instagram . https://www.instagram.com/abstractaerialart/ July 27th, 2017

Fig. 52. Aerial Drone Photograph, Caption from Abstract Aerial, Instagram. https://www.instagram.com/abstractaerialart/ July 27th, 2017

Fig. 53. Aerial Drone Photograph, Caption from Abstract Aerial, Instagram. https://www.instagram.com/abstractaerialart/ July 27th, 2017

Fig. 54. Aerial Drone Photograph, Caption from Abstract Aerial, Instagram. https://www.instagram.com/abstractaerialart/ July 27th, 2017

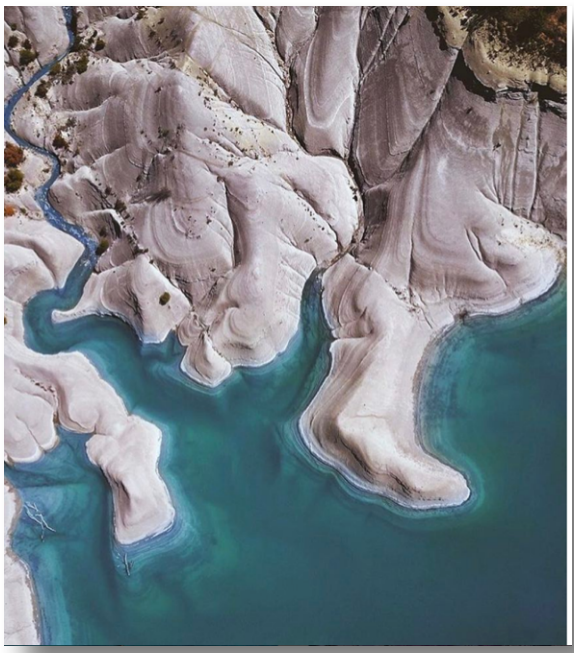

Fig. 55. Aerial Drone Photograph, Caption from Abstract Aerial, Instagram. https://www.instagram.com/abstractaerialart/ July 27th, 2017

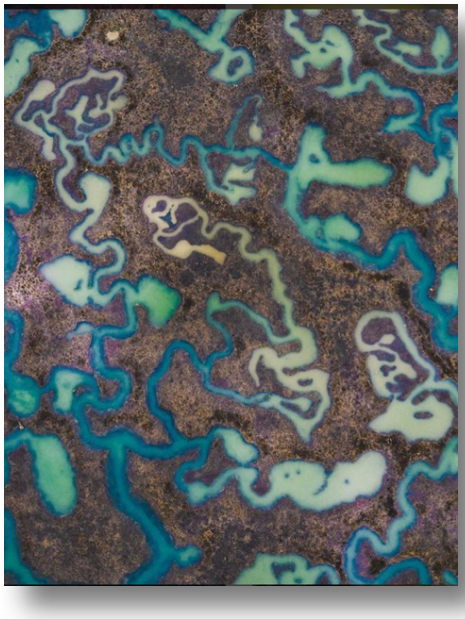

Fig. 56. Aerial Drone Photograph, Caption from Abstract Aerial, Instagram. https://www.instagram.com/abstractaerialart/ July 27th, 2017

Fig. 57. Philippe Lê, *Assemblage of drone photographs*, 2014 © Philippe Lê