Training the eye: production and reception of aerial photography during the World Wars

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ABSTRACT

This paper explores the entanglement between photography and aerial military operations during the World Wars, showing how, in warfare, the camera became a technology of power serving a dual purpose: 1) It was a weapon used to map the territory as well as to detect and bomb specific targets, and 2) it constituted a powerful propagandistic medium employed to circulate persuading and aesthetically innovative aerial vistas among civilians. The technological and industrial sophistication that was adapted to the modern aerial battlefield required optical and photo-developments. These technical improvements challenged military activity while also reshaping civilians' perception and conception of the landscape as well as determining new aesthetic canons. At the core of this article there is the notion of *training of the eye* – understood as the process, which involved both experts and the general public, of assimilating new photographic vistas from the sky.

Using mostly the North American and German frames of reference, and interweaving military technology, visual culture, and landscape studies, this paper analyzes production and reception of "the view from above" mainly through mass-market illustrated magazines, such as the American *Life* and the German *Berliner Illustrirte Zeitung*.

Developed within the military context, the peculiarity of aerial photography became embroiled with the idea of a cold, hunting, distanced and simultaneously penetrating gaze. However, recent scholarship understands the aerial view differently, due to the latest use of aerial photography for environmental science, and with the purpose of raising public awareness on the devastating ecological impact of industrialization and militarization. The contemporary progression from aerial photography to satellite imagery can in fact be interpreted along two directions: the God's-eye view of surveillance and/or the bird's-eye view of environmental care.

KEYWORDS

World Wars; aerial photography; God's-eye view and bird's-eye view; photographed landscape; German and American illustrated magazines

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1. Introduction

This paper traces the origin of the systematic use of military photo reconnaissance in the First World War, it then explores the adaptation of aerial photo-technology for commercial use in the interwar period, and, lastly, introduces later developments at the outbreak of WWII. This article, however, does not only analyze the production of aerial photographs, but it also investigates the circulation of this material through the printed media: systematically examining some of the most popular illustrated newspapers in the U.S. and Germany in the first half of the twentieth century (particularly the German *Berliner Illustrirte Zeitung* and the American *Life*). This methodology allows a comparison of two Western countries that, in both war and peacetime, played leading roles in producing optical systems, photographic devices, imaging products, and specific photographic trends. Such visual innovations, alongside the evolution of aviation, became relevant tools in developing reconnaissance and mapping. Part of this photographic military-documentary material also became a propaganda instrument, which created effective new ways of representing and conceptualizing the landscape to civilian audiences. Moreover, Germany and the U.S. were often mutually influenced by visual communication strategies when publishing aerial photographs. Therefore, the present study demonstrates how new militarized visualities changed the way of making war by transforming the act of observing and interpreting territories, while also creating new aesthetic canons to represent the landscape that impacted society at large.

Studying aerial photography in warfare considers aspects of at least three disciplines: military technology history, media and visual communication studies, and landscape studies. The broad concept of landscape itself, as argued by the geographer Denis Cosgrove, emerged as a "way of seeing," imagining, constructing, and representing "the external world." As a "visual term" and mode to conceive and organize space, the idea of landscape has been explored by art and architecture as well as survey, map-making, and artillery science (Cosgrove 1985: 46). Although 'non-representational theory' within cultural geography have criticized the ocular-centric approach to landscape, other geographical researches have also highlighted the power of photographic media to shape human understandings of the world: supporting exploration, topographic mapping, and public geographical imagination (Ryan 2013; Dyce 2013). In this perspective, this article clarifies how landscape as a visual concept (from a morphological and iconographical point of view) was transformed by the industrial photo-optical technology developed within the military context of the World Wars.

Training the eye is a useful term to explain the collective effort that soldiers, pilots, and photo-interpreters made to learn new photographic techniques through imaging and surveillance technology manuals and programs. This concept can be also applied to civilians' assimilation of pictures showing environments that were unimagined before the perfect combination of photography, airplane, and photomechanical printing. The widespread training of the eye in the first half of the twentieth century compelled every single layer of the society and completely transformed people's way of observing and absorbing the world.

Furthermore, dealing with aerial photography inevitably means recognizing the ambivalent essence of the view from above. On the one hand, the distant perspective determines a fascination with an overall view that may drive a constructive and critical analysis of territories. On the other hand, its abstraction can also be interpreted as a form of detachment, control, and power. This ambiguous quality of aerial photography – as technology of power deeply rooted in the military context and, simultaneously, mass medium proposing astonishing point of views on the world – that emerged in the first half of the last century, preludes some concerns the spread of aerial views captured by drones originates today. Experimental drones were invented for military reconnaissance and surveillance in the early twentieth century. During WWII, they started to be armed with bombs and missiles – when Americans had to compete with Japanese kamikazes. They were then used in battlegrounds of Vietnam, Yugoslavia, Israeli-occupied territories, and more recently to fight al-Qaeda and the Islamic State in the Middle East (Parks et al. 2017). Despite the military origin of drones, since 2010s, magazines devoted to geography, science, and nature, like National Geographic and GEO, have been consistently publishing articles about the most diverse applications of unmanned aerial vehicles (UAVs) in civilian sectors, including holding annual contests dedicated to the best drone photography (Handwerk 2013; Smith 2017).

The example of drones shows how aerial photography as a "technology of power" (Foucault 1977) can be applied to an entirely different array of purposes, including a rapid expansion to scientific, commercial, recreational, conservational, and agricultural applications. Produced for warfare, the drone is not certainly a unique case of an artefact that extends and diversifies its functions. Generally, new technologies ensure greater effectiveness the more they demonstrate chameleon-like ability to adapt to different sectors. In the modern wars the entire technological apparatus is enhanced, and technologies of vision are not excluded from a continuous boost of performance.

If it is widely recognized that the nature of visual perception is historically and culturally constructed (Kleinberg-Levin 1997), investigating the evolving interdependence of war and imaging allows us to understand how this relationship has influenced

many aspects of the visual culture of specific societies. In other words, how has the "militarized vision" – discussed here as innovative aerial visual technologies developed during conflicts – created new ways of perceiving and understanding reality during and after the World Wars?

This paper focuses on the origin of photographic aerial view formalization, analyzing the interdependence of aerial photography and military strategy during the World Wars, and showing how aerial photographs were presented to the German and American audiences. In fact, despite some civilian uses of aerial photography before the First World War – particularly interesting is Sebastian Finsterwalder's 1889 survey of glaciers in the Tyrolean Alps from balloons – geographers and photogrammetry experts agree that WWI is the source of the systematic coverage of the earth's surface by means of photography (Cosgrove 2010; Konecny 2012; Ryan 2013). For quantity and heterogeneity, aerial pictures produced and published during the Great War transformed the way the space is perceived, which led to a number of applications that continued in the interwar period. Many personalities involved in aerial operations during WWI became active promotors of "the view from above" in the postwar period: The German balloonist Robert Petschow showed his aerial photos both in international art exhibitions and in geographical publications, the British wartime pilot Osbert Guy Crawford became a key figure of aerial archeology, while the realist photographic style (straight photography) of the American fine artist Edward Steichen was influenced by his war experience as chief of the Photographic Section of the American Expeditionary Forces, in charge for aerial reconnaissance photography. Therefore, starting from WWI, the surprising photographic environments advertised in the news inaugurated a new geography from the air, which directly affected people's way of seeing and experiencing the landscape below and the space above.

Although this article mainly addresses the topic of aerial photography from a historical perspective, it intends also to contribute to the contemporary theoretical debate which classifies aerial vista in two distinct categories, namely as a manifestation of either empathy or detachment. The supremacy of seeing from an elevated perspective, while practically invisible, recalls the notion of objective and penetrating "God's-eye view" that many authors, primarily Denis Cosgrove (1994), have identified as a dominant feature in Western society. However, recent interpretations of aerial photography (McCormack 2010; Amad 2012; Kaplan 2018) argue for a more complex and ambivalent understanding of photo-observation in warfare, rejecting the idea that it (and its progeny remote sensing) is exclusively a symptom of omniscient power. New philosophies of photography, such as the one Joanna Zylinska (2017) proposes in the book *Nonhuman Photography*, link camera's potentiality with the creation of non-human viewpoints and "new modes of seeing and imagining" the environment, which would challenge prevailing anthropocentric models. This kind of attitudes will be named "bird's-eye view" in the present article.

The next sections are organized in the following order: part 2 describes the production of photographic material for military purposes, part 3 shows the mediatization of war through circulation of photographs in the commercial press, while part 4 tackles the practice of aerial photography from a theoretical point of view. Problematizing the type of gaze developed in warfare and considering the consequent turning point in understanding the landscape will also be discussed in the 4th part.

2. Photography and War: An Indivisible History

2.1 WWI as an "Incubator" of the Military Techniques of Vision

"There is no war without photography" observed Susan Sontag in the book *Regarding the Pain of Others* (2003: 53), referring to a concept Ernst Jünger expressed in the thirties.

Since the daguerreotype was introduced worldwide in 1839, military and political interests in photography's potentialities increased, leading to experiment rudimental devices on the battlefields of the nineteenth century: The first attempt was made by the British government during the Crimean War, and a more systematic involvement of photographic techniques in an armed conflict occurred in the American Civil War. In these two cases, politics intended to take advantages of "objective" recordings either propagandistically sustaining or condemning military actions. However, armies also aspired to employ accurate aerial images in strategic operations. After the acclamation of pioneering aerial views of cities from balloons or kites – the first was Félix Nadar's image of Paris in 1858, followed by J.W. Black's iconic shot of Boston two years later – the armed forces of various nations tried, unsuccessfully, to integrate reconnaissance techniques in their campaigns. The inadequacy of kites and aerostats was ascribed to their inaccurate navigation and targeting, as well as the risk of being easily shot down by the enemy. This second problem also affected rigid dirigibles powered by propellers, such as the famous Zeppelins, which from the beginning of the twentieth century carried cameras, and during the first world conflict were occasionally used by Germany to bombard Allied Powers. *Baby-killers* – as long-range Zeppelin bombers started to be called in England in WWI – were then substituted by airplanes. By means of the latter, the ability of flying, which for centuries had maintained the fascinating aura of a dream, was completely accomplished. At the

beginning of the First World War, the armies took over the latest discoveries in the sectors of flying machines and photography and, accelerating the successful combination of photo device and airplane, exploited photoreconnaissance for intelligence and mapping.

Footage taken by soldiers for private purposes, photographs produced as official documentary and propaganda, and photography used as a military tool contributed to make WWI the first war to be defined in German context as a "Medienkrieg:" Namely a conflict that has been photographed, reported, and narrated in detail by all its participants with any possible available media (cf. Paul 2004). Through the army postal service, when not censored, soldiers sent postcards to their families, including a high number of snapshots picturing devastated landscapes that totally differed from previous pictorial canons. Completely transformed by unprecedented destructive technologies, the landscape remained only barren land, a *no man's land*.

The territory between and around opposing trench lines was also a main subject of military aerial photography. Although at the outbreak of the First World War the use of aerial photoreconnaissance encountered the resistance of traditionalist senior leaderships, by the end of the conflict it played a significant role in tactical planning, in surveying as well as in reconnaissance. Pilots started to take pictures with conventional hand-held cameras during their visual aerial surveys, noticing that photography could acquire more detailed information to integrate into their reports (Figure 1).

When commanding officers understood the value of this material in revealing changing patterns on the battleground, by measuring and anticipating enemy's actions, specialized automatic cameras were developed to be mounted on the external side of the aircrafts or within the fuselage. It has been estimated that Germany, who had a leading role in the employment of aerial reconnaissance photography, took around 4000 photos a day, covering the entire Western Front twice a month in the last year of the war (Stanley 1981: 26). This huge amount of images is still available today consulting the Bavarian War Archive in Munich, which, despite being one of the largest World War One aerial reconnaissance collections, only represents a small portion of the overall German aerial imagery that survived WWII.

Fig. 1 German observer with a handheld camera taking pictures from an airplane in spring 1917 (Bundesarchiv, Bild 183-R27851).

Since artillery, the dominant weapon of WWI combat, depended on accurate topographic control, aerial photography also supported mapping operations, which covered all battlefields including territories in the Middle East (Kaplan 2018: 138–179). Cameras used in a military context could provide both oblique and vertical images. The oblique perspective emphasizes the shape of three-dimensional elements (vegetation, buildings, etc.), while vertical views, used at a higher altitude, included greater areas and allowed to recognize the changing of patterns on the grounds. New methods to derive an accurate planimetry from panoramic photography and to interpret ground features were experimented: the *Reihenbildner*, for instance, was a German camera able to take a rapid sequence of photographs (10 per second) that once printed needed to be rearranged in line to obtain an overall map of an area (Jäger 2007: 292–293). Through this technology, in the course of a single flight pilots filmed a land surface that measured 60-by-2.4-kilometer at the scale of conventional topographic maps (Wohl 1994, Figure 2).

Aerial reconnaissance was an essential factor for the evolution of aviation itself: aerial photographs had become so valuable that both Allied and Central Powers built pursuit planes to prevent violations of their respective airspace. Modern fighter aircraft developed directly from the consequences of integrating cameras and planes. To avoid interception, reconnaissance aircrafts needed to fly at higher altitudes, causing several problems to the mechanisms of cameras: lower temperature generated moisture in the devices and froze lubricants. In order to prevent this malfunction, Germans provided their cameras with an electrical heating system. The Rumpler CIV was a typical two-seat fighter/reconnaissance airplane, mass produced in 1917; it could reach high altitudes of up to 7000 meters, thereby avoiding anti-aircraft artillery. Its camera lens was positioned in a hole in the fuselage under the observer's position. On these types of aircraft the *Maschinengewehrkamera* (machine gun camera) operated, exemplifying the fusion of camera and gun. Invented by the film tycoon Oskar Messter, and constructed by the Ernemann company in Dresden, this camera fully resembled the German-made MG08 machine gun, with the only difference that the trigger button shot films instead of ammunitions and was utilized by pilots on fighter planes to simulate dogfight (Figure 3).

German optics, such as Carl Zeiss lenses, were more advanced than any other combative countries' technology in WWI. When the U.S. entered the war,

Fig. 2 German photographic map (Reihenbild) of Venice contained in the aerial reconnaissance weekly report *Wochenbericht Nr. 7, Über die Tätigkeit der Fliegerverbände, Kommandeur der Flieger 14*, dated November 4–10, 1917. Deutsches Museum, Munich, Archive, CD 80907.

the Army urgently requested American civilians for their optical gears, including lenses, telescopes and binoculars, specifically naming several German manufactures. Although U.S. aviation units initially relied on European photographic equipment, due to their late arrival in the theater of war, they soon established a Photographic Section attached to the American Expeditionary Forces (AEF).

Fig. 3 A photographic strip (Bundesarchiv N 1275 Bild-305) taken by the *Maschinengewehrkamera* (machine gun camera) invented by Oskar Messter in 1915 and fabricated by the Ernemann company in Dresden (Deutsches Museum, Munich, Archive, CD 68040).

Using James B. Campbell's terminology (2008: 77), the First World War was the "incubator" for aerial photographic techniques and photointerpretation systems that were largely employed in WWII. During this experimental stage, the human eye needed to be trained in order to be able to interpret new geography from the air. Pilots, aerial observers, and photo-interpreters learned to see the landscape below according to taxonomies. They acquired skills in photo recording and interpretation by means of imaging and surveillance technology manuals and programs; in Germany part of the training took place in the *Flieger-Beobachtungs-Schulen* through manuals like *Lehrbehelf für Photographie aus dem Flugzeuge für Beobachter-Offiziere* (Teaching Aid for Photography from Aircraft for Observer Officers) (1916) written by Alfred Thiel or *Die Erkundung aus Fliegerbildern* (Reconnaissance through Aerial Photographs) (ca. 1916) by Leutnant Wecker.

2.2 WWII: Imagery Intelligence as a Systematic Discipline

After WWI, military interest in photo intelligence diminished and, although nations maintained their technical capabilities, there was no significant application and organization of photoreconnaissance in peacetime. However, commercial air travel and photography as a mass medium kept on evolving. After the passenger-carrying dirigible Hindenburg exploded in New York in 1937, the airplane started to dominate commercial fleets. The German state company

Lufthansa became the largest European carrier, and with the onset of the Second World War the civilian airline was militarized by the Nazis. WWII was indeed in large measure fought with manned aircrafts, and the logistical planning based on aerial reconnaissance was fundamental in determining its outcome. In *Photography and Flight*, Denis Cosgrove traces the evolution of imaging products from commercial context to military scenery. He highlights how mobilization and constant innovation of the technological apparatus during the conflict determined the level of progress in specific countries once the war was over: "Virtually every film and camera producer in America, Germany and Japan was recruited to meet wartime need, giving professionals in those countries the pre-eminence as innovators and manufacturers of photographic equipment and supplies that continues to these days" (2010: 55).

Dark-yellow filters to reduce the effect of light reflecting on the sandy surface of the desert, methods to prevent the film coating from melting in North Africa, infrared devices to detect troop movements at night, more precise gun cameras to record the shooting down of enemy aircrafts, multiple lens systems for mapping: these were some innovations belligerents developed to obtain the most detailed possible image on finest-grain film employable. Maintaining quality images was a necessary requirement to overcome camouflage techniques applied by competitors once technological observation of the enemy became increasingly sophisticated. The figure of the specialized photo interpreter, intent on minutely scrutinizing two photographic prints through a stereoscope in order to gain a 3D image easier to discern, originated from this war context and was later well described by war memoirs of flight officers, such as Constance Babington Smith's *Evidence in Camera* (Figure 4).

Fig. 4 The photo interpreter Constance Babington Smith with a stereoscopic viewer analyzes reconnaissance photos of the German Peenemünde Army Research Center. In 1943, working at RAF Medmenham, she was the first interpreter to detect V-1 flying bombs in the Peenemünde Airfield (UK CROWN COPYRIGHT, provided courtesy of the Medmenham Collection).

The technical improvements of photo devices evolved simultaneously to engineering solutions in constructing the most effective airplane for aerial photography. To not be detected and shoot down, recon aircrafts had to meet three essential elements: exceptional speed, elevated range, and high-altitude capability (Stanley 1981: 77). The perfect balance of the three attributes was achieved in models like the De Havilland 98 Mosquito (known also as "Mossie"), which was the main British photo collector, and according to many military historians also the best photoreconnaissance aircraft in the war.

As an expert in imaginary intelligence heritage, Colonel Roy M. Stanley explains that aerial photography in WWII was regularly applied for selecting bombing targets, determining bombing accuracy, pinpointing defense positions, analyzing equipment capabilities, serving as a basis for maps, and searching for indications of enemy intentions (1981: 3). This impressive broad scope of use, developed from the experience gained in WWI, demonstrates that imagery intelligence was formalized as a systematic discipline within WWII national air forces. However, unlike the WWI system where different military sections performed their own photo-interpretation and information were coordinated at a later time, in the Second World War nations established central photo reconnaissance units, allowing faster reactions to critical situations. Moreover, employing aircrafts optimized for aerial photo operations, flight requirements evolved differently in mapping missions than in intelligence missions. In the last case, specific protocols imposed that an object was nominated, photographed, exploited, and the intelligence put into an operational framework. Therefore, WWII photo intelligence involved a high degree of expertise and a specialization in every phase of the process.

Colonel Stanley also clarifies: "Each camera on an aerial mission used rolls of film that were up to several hundred feet long and from three to twelve inches wide. The photos were overlapping still pictures taken at intervals of from one to ten seconds. […] it was work photography, often having little apparent value to the layman until its secrets were unlocked by skilled technicians" (1981: 11). The majority of these aerial pictures reported the name of the aviation unit, number of shot, date, time, location, grid reference, altitude, and focal length; on the images an arrow indicated the north. Therefore, a series of snapshots portraying a peaceful beach and nearby cliffs in a sunny May – which nowadays has the familiarity of a panoramic view taken with commercial drones at low altitude – revealed

Fig. 5 Reconnaissance photograph taken from an American Lockheed P-38F-5 fighter, flying at low altitude over Normandy in May 1944. Smithsonian National Air and Space Museum , NASM 9A06762.

a top secret, high risk, and historic mission. A pilot, on Lockheed P-38F-5 fighter with an oblique-angle camera mounted in the aircraft's nose, took these pictures in order to detect enemy fortifications. After flying over an apparent ordinary landscape, he finally located wired tripods sticking up on the beach. Photo interpreters later revealed that these small pylons, invisible at high tide, indicated the positions of German mines (Heiferman 2012: 195–197). It was the eve of the Allied landings in Normandy (Figure 5).

3. Aerial Photography in the Mass Commercial Press

3.1 German publishing

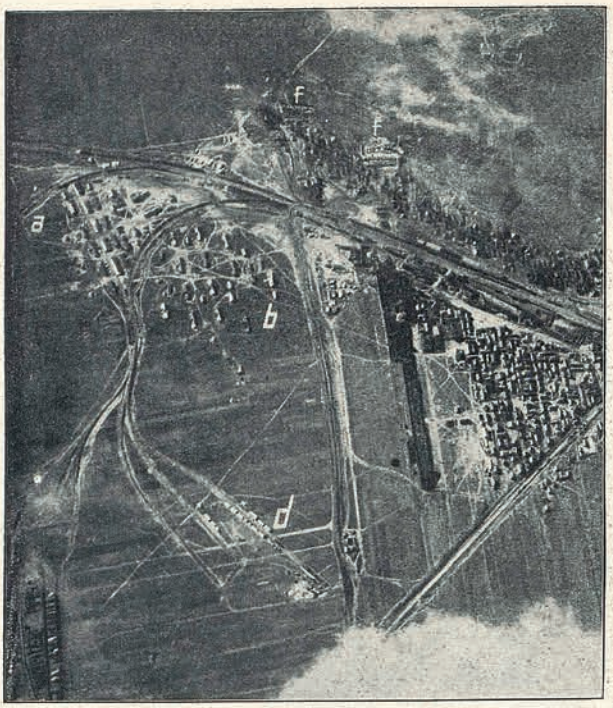
If the *production* of imagery on battlefields was staggering in both World Wars, the large-scale *reproduction* and distribution of this material to *in-form* public opinion was not less significant.

Using new technologies like the rotary printing press and the halftone, illustrated magazines started to incorporate photos to the articles. Illustrated periodicals were already one of the most popular print mediums since the beginning of the XX century (Ross 2010: 20–33). Although paper was in short supply in WWI, publishing companies rapidly adapted to the new situation by restructuring the volume and content of their publications. With a reduction in the number of pages for single issue, many German illustrated magazines continued to be published weekly. The most popular illustrated magazines in wartime were the *Berliner Illustrirte Zeitung* (*BIZ*) and *Die Woche*, both published in Berlin. Interestingly, the public demand for news from the various theaters of war increased people's interest in visual reports: in fact, the number of copies sold by the *BIZ* grew from 100,000 at the beginning of the century to 800,000 in 1915, maintaining this level for the entire duration of the conflict (Weise 1991). Illustrations, maps, and reports with aerial photos facilitated the readers' understanding of events in war zones (troops movements, commanders' decisions, military activities on the front lines). Moreover, many illustrated magazines specifically dedicated to the developments of war appeared in 1915: *Die große Zeit. Illustrierte Kriegsgeschichte*, *Deutsche Kriegszeitung, Illustrierte Kriegs-Zeitung/Das Weltbild*, *Illustrierte Geschichte des Weltkrieges*, and *Illustrierter Kriegs-Kurier* were some of most popular titles. Offering experts' in-depth analysis on military strategies, innovative technologies, and medical innovations employed on the battlegrounds, these magazines were accompanied by many illustrative photographs, sometimes covering entire pages, which at that time measured ca. 34 × 26 cm. Over the years, the numbers of photographs incorporated in newspapers increased, substituting illustrations.

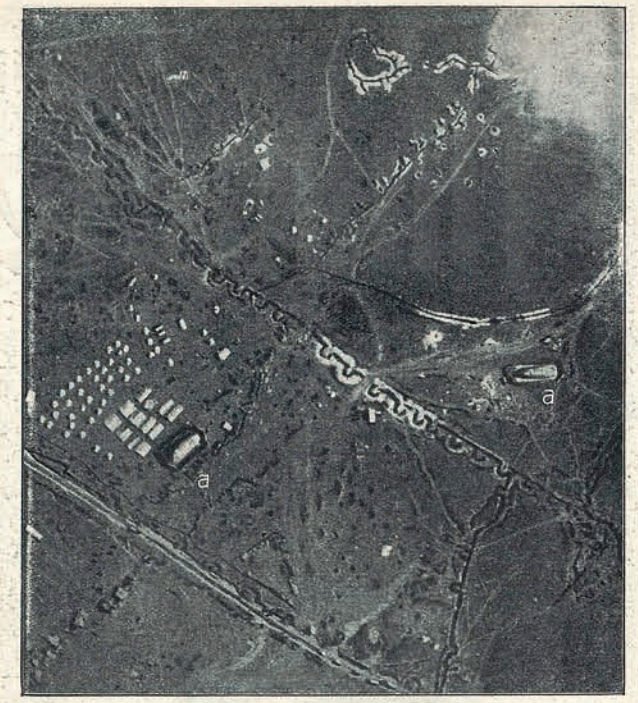
In this period, an aerial photo appeared at least every two weeks in regular illustrated magazines, and even more frequently in the newspapers dedicated to war. Most of the pictures taken from balloons, dirigibles, and airplanes in wartime were primary reconnaissance images created for military reasons and only at a later time they were made public (although the black stripe reporting technical information about the shot was always removed for military security, and photomaps remained top secret).

Individual vertical aerial photography largely became available in magazines during the war, representing a visual revolution for the German public. New photographic environments, portraying "flat" and "abstract" lands excluding any tridimensional effects, were explained to the population through dedicated articles that repeated the mantra: "Wie der Flieger sieht," "Was der Flieger sieht" (How/what the aviator sees). In March 1917 the *Berliner lllustrirte Zeitung* published an analysis of the new way of seeing the landscape from above developed by the aviation, describing the role of the pilot (Flieger) and the observer (Beobachter), and comparing their "trained eyes" with the vision of an ordinary citizen (Figure 6). The first words of the piece say: "Seeing is a matter of practice!" ("Sehen ist Uebungssache!"). A trained aviator gradually learns how to "really see" the landscape, grasping the important features of the land with a quick gaze. The article continues explaining: Where the ordinary person notices only a landscape, the aerial observer, thanks to photo devices, discerns a multitude of noticeable details, which offer many tactical possibilities. Making a fragment of time eternal, such photography presented a landscape that could

130 Berliner Illustrirte Zeitung. Nr. 10



Flieger-Aufnahme des Bahnhofs Horodzieja: Dieser sonst unbedeutende Bahnhof wurde vor Beginn einer russischen Offensive außerordentlich erweitert. Die deutsche Flieger-Aufnahme läßt erkennen: a und b große Hallen und Schuppen; d neue Ausladebahnhöfe; f Feldbäckereien.



Das Kampfgelände südlich Montauban, aus 3000 Meter Höhe aufgenommen. Die deutsche Flieger-Aufnahme zeigt zwischen verlassenen Schützengräben und Infanteriestellungen feindliche Truppenzelte sowie (bei a) zwei Fesselballons die im „Windschutz" liegen.

Was der Flieger sieht

Bahnhof Rowno, Rußland. Die Flieger-Aufnahme läßt jeden einzelnen Wagen der vielen auf den Rangiergleisen stehenden Güterzüge erkennen.

Sehen ist Uebungssache! Achtlos übersieht das nicht geschulte Auge, was für das Künstlerauge von größter Wichtigkeit, von stärkstem Reiz ist. Der Laie sieht eine anmutige Landschaft, der Generalstabsoffizier erblickt darin eine Fülle taktischer Möglichkeiten. Wer zum ersten Male fliegt, wird seine Freude haben an der Welt wie er sie von oben erblickt: so „sauber und niedlich" sieht alles aus. Erst allmählich lernt der Flieger „sehen", d. h. Wichtiges mit raschem geschulten Blick erfassen; Zeit zum behaglichen Beschauen hat er nicht, namentlich heute nicht mehr, wo die Gefahren für ihn von der Erde aus und in der Luft sich vervielfacht haben. Während des Fluges überm Feind arbeitet der Beobachter in angespanntester Tätigkeit; er hat im wahrsten Sinne des Wortes alle Hände voll zu tun. Er gibt nach der Karte die Flugrichtung an, macht Aufnahmen der wichtigen Geländeteile, notiert seine Wahrnehmungen, bedient die Bombenabwurfvorrichtung und muß dabei jeden Augenblick bereit sein, einen Luftkampf aufzunehmen. Unendlich anstrengend ist dies alles, auch das lange Stehen — und stehen muß der Beobachter fast während der ganzen Flugdauer überm Feind — ermüdet sehr, weil ständig ein enormer Luftdruck gegen den Oberkörper liegt. Nerven darf der Flieger gar nicht haben, platzende Schrapnelle in nächster Nähe dürfen ihn in der Arbeit nicht stören; der Auftrag muß erfüllt werden; und läßt der Beobachter sich durch solche „Aeußerlichkeiten" ablenken, so bedeutet das nur, daß er um so länger im feindlichen Abwehrfeuer bleiben muß, wodurch er wieder unnötig die Nerven seines Führers verbraucht. Was muß nun der Beobachter sehen? Alles, was irgendwie wichtig ist, um daraus Schlüsse auf die Absichten und die Tätigkeit des Feindes zu ziehen. Da ist zuerst die Front selbst. Bis auf kleinste Grabenzipfelchen muß er die feindliche Stellung genau erkunden und sie durch aneinandergereihte Lichtbilder festlegen. Für eigene Infanterieunternehmungen ist es von größter Wichtigkeit, genau im feindlichen Grabensystem Bescheid zu wissen. Dann kommt die feindliche Artillerie! Eins der schwierigsten Gebiete. Nur sehr geübte Beobachter können mit Sicherheit eine besetzte Batteriestellung von einer unbesetzten, eine Scheinstellung von einer wirklichen unterscheiden. Am leichtesten ist eine Batterie während des Schießens am Mündungsfeuer zu erkennen, aber bei Annäherung des Fliegers wird eben jedes Schießen (ausgenommen das der Fliegerabwehrgeschütze) abgebrochen. Da heißt es denn, mit unsäglicher Geduld nach den äußeren Umständen seine Feststellungen treffen; auch hier wird natürlich jede Stellung photographiert. Es klingt so einfach: „wird photographiert". Der photographische Apparat wiegt etwa 20 Pfund und muß außerhalb des Rumpfes senkrecht und möglichst ruhig gehalten werden, damit die Aufnahme nicht „verwackelt" wird. Ein Aufstützen auf die Bordwand

Fig. 6 *Berliner Illustrirte Zeitung* (March 11, 1917): *What the aviator sees*. Berlin, Ullstein, 10, 130.

Fig. 7 *Berliner Illustrirte Zeitung* (January 11, 1925): *The giant toy. The world from above: Rides in a hot-air balloon*. Berlin, Ullstein, 2, 36–37.

be amply explored even at a later stage; but only if the viewer held the key to interpret the space from above. The practice of publishing two aerial pictures next to another presenting a target (a village, a fort, or a train station) before and after a bombing started in WWI.

Thus, military methods of photoreconnaissance produced a new aesthetic, completely transforming the way of seeing and interpreting the landscape. This change determined the visual canons of the German society in the following period of the Weimar Republic. In fact, newspaper articles devoted to vertical aerial photography continued to be published even after the end of conflict. In the interwar years public attraction for aviation – partially created by the popular narrative of the hyper-masculine *Fliegerheld* (flying hero) emerged from WWI – was reinforced by the risky adventure of sporty brave individuals. It is the case of Willi Ruge's spectacular photo-essay "I Photograph Myself during a Parachute Jump" (BIZ 1931: 843–845). Ruge was an aerial gunner and a reporter in WWI. Later on, he worked in the German aviation film industry, and became internationally famous for portraying himself during his parachute descent with a camera strapped to the belt. These eye-catching pictures condensed all the components that the modern narrative of illustrated magazines imposed in the interwar period: documentation, entertainment, modern sporting heroism, and technical abilities (the latter often gained in the previous military context).

It was quite common that pilots and photographers who served in WWI later became photo and film entrepreneurs as well as fundamental personalities in disseminating aerial photographs. Robert Petschow, a professional soldier in the Airship Battalion deployed by the army to operate tethered balloons, learned new photographic techniques on the battlefields of WWI. After the war, besides editing the aviation magazine *Die Luftfahrt*, he traveled all over Germany, becoming the best-known aerial photographer of the interwar years by regularly publishing on illustrated newspapers (see BIZ 1925: 36–37, Figure 7). His vertical shots proposed a new visual experience of the landscape, showing a human-made geometry and a sense of abstraction to a certain extent similar to the close-ups offered by the microscope (Beckmann 1992). With this avant-garde approach – corresponding to the revolutionary German photographic movement of the *Neues Sehen* – Petschow's work was selected for the international exhibition *Film und Foto* (*FIFO*), which occurred in Stuttgart in 1929 and was organized by the Deutsche Werkbund (German association of architects, designers and industrialists). Influencing generations of artists, *FIFO* has been considered a crucial exhibition that, for the first time,

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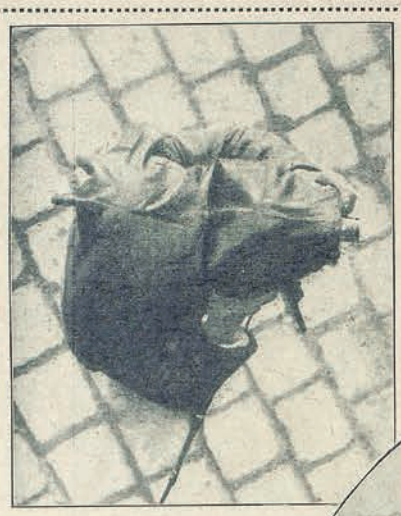
Weihnachts-Preisrätsel

„Die Welt von oben gesehen"

Was stellen diese 6 Bilder dar?

Von oben, vom Luftschiff, vom Flugzeug aus, nehmen die Dinge eine ganz andere Gestalt an. Sie sehen wie breitgequetscht



Die Welt von oben gesehen. Was stellen diese Photographien dar? Bild 1.

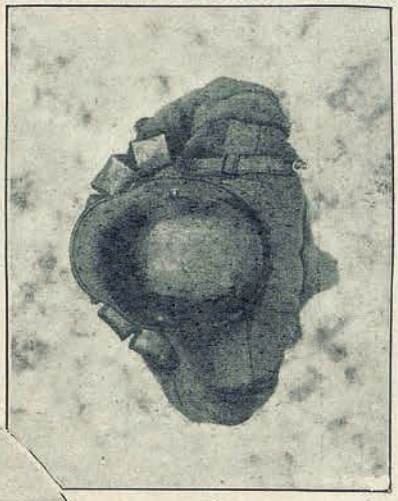


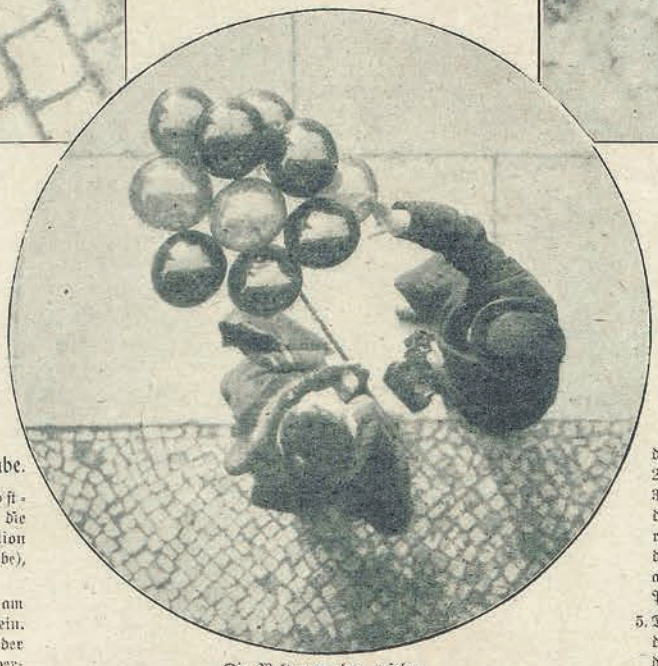
Bild 2.

aus. Können unsere Leser die hier abgebildeten photographischen Aufnahmen enträtseln? Auf die richtige Lösung dieser Preisaufgabe, also auf die Angabe, was jedes dieser sechs Bilder darstellt, setzen wir Preise aus von zusammen

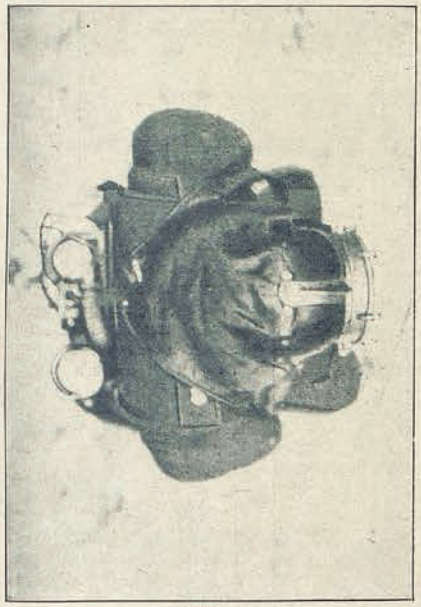
1000 Mark.

Bedingungen zur Preisaufgabe.

1. Die Lösungen müssen auf Postkarten geschrieben sein und die Adresse tragen: An die Redaktion der „Illustrirten" (Preisaufgabe), Berlin SW, Kochstraße 22/26.
2. Alle Lösungen müssen spätestens am 20. Januar in unserem Besitz sein. Das Ergebnis wird in einer der darauffolgenden Nummern veröffentlicht werden.
3. Für die richtige Lösung setzen wir einen 1. Preis von 300 Mark, einen 2. Preis von 200 Mk., einen 3. Preis von 100 Mk. und nach Bedarf bis acht Trostpreise von je 50 Mk. aus.
4. Gehen mehrere richtige Lösungen ein, so werden die Preisträger durch das Los bestimmt, derart, daß aus allen richtigen Lösungen der zuerst Gezogene den Hauptpreis, der Zweite den 2. Preis, der dritte Gezogene den 3. Preis und die folgenden 8 Löser die Trostpreise erhalten. Gehen mehr richtige Lösungen ein, so müssen die durch das Los nicht Gezogenen sich auf mehr Glück bei einem späteren Preisausschreiben vertrösten.
5. Die einmal getroffene Entscheidung der Redaktion, der sich die Einsender durch ihre Beteiligung unterwerfen, ist auf alle Fälle endgültig.



Die Welt von oben gesehen.
Ein Beispiel: Photographische Aufnahme einer Verkäuferin von Pinderballons.



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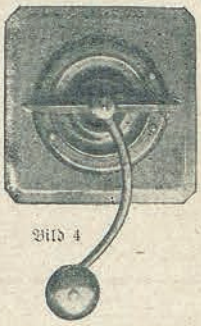

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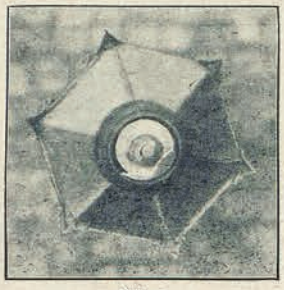

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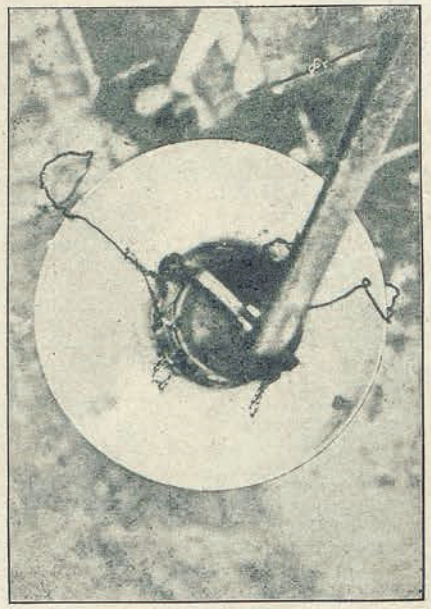

Bild 6.

Fig. 8 *Berliner Illustrirte Zeitung* (December 28, 1919): Prize competition *Seeing the world from above. What do these 6 images represent?* Berlin, Ullstein, 52, 544.

gathered American and European experimental production together. However, not only the field of art was interested in Petschow's aerial views. A copious amount of his photos illustrated Eugene Diesel's book *Das Land der Deutschen* (1931), a geographical survey composed of three sections: *Die Naturlandschaft* (the natural landscape), *Die Kulturlandschaft* (the cultural landscape), and *Die Maschinenzeit* (the time of machines). The book became so popular that a new affordable edition appeared in 1933, with a changed introduction supporting the nationalistic idea of German landscape promoted by the rising regime.

Finally, readers were even encouraged (through games) to discern strange objects represented from above. Starting from December 1919, the *BIZ* proposed prize competitions by asking the public: *Die Welt von oben gesehen. Was stellen diese 6 Bilder dar?* (Seeing the world from above. What do these 6 images represent?). A game that nowadays would be pretty easy to solve, it must not have been so obvious in 1919, since the first prize was 300 marks – a substantial sum at the time (Figure 8).

Although the mainstream tendency of the print press during the post WWI Weimar Republic aimed at attenuating the recent traumatic experience of war with a renovated vitality – an editorial line known at *BIZ* as "Lebensfreude" (joy of living) – the previous examples demonstrate that military aerial photography determined new aesthetic models that profoundly influenced German visual culture.

3.2 American publishing

The famous American mass circulation magazine *Life* first appeared in 1936 and was launched by Henry R. Luce. It promoted greater accessibility to the news using pictures rather than texts. *Life* borrowed formulas that were already experimented by the pioneering *Berliner Illustrirte Zeitung* (*BIZ*) – such as candid photography and photo essays – and shared with the German periodic the idea of "seeing life in pictures" (Korff 1927). The influence of *BIZ* on *Life* was also due to the work of Kurt Korff, an editor at *BIZ*, who emigrated to the U.S. when Adolf Hitler came to power, and late became advisor to Henry R. Luce's magazine. However, *Life* was even more sensational than *BIZ* due to its panoramic views, sophisticated layout, and engaging documentaries. Reducing the distinction between political press, commercial press, war reports, and advertisement, the magazine aimed to inform and entertain the public, inevitably being the reflection of a society that increasingly integrated "spectacle" and "modern living" with the "war living."

When the United States entered WWII in 1941, *Life* started to publish photographic materials officially provided by U.S. Army Air Forces, U.S. Signal Corps, and the U.S. Navy, integrating documentaries by famous photo reporters. Differently from WWI, aerial photographs published in WWII newspapers were not exclusively provided by the military aviation; rather, for the first time, professional photographers hired by *Life* magazine were attached to the U.S. Army Air Forces with the purpose to document specific aerial activities (often in the aftermath of the attacks). After the testing ground of the Great War, photography was generally recognized as a powerful tool of propaganda, necessary to raise the spirit of nationalism in the population, justify the sacrifice of American soldiers, and legitimize U.S. military interventions.

On many pages of the magazine, it was common to find graphic and photographic explanations of the technologies used by the different American military corps during the war and the effects of the enemy's weapons, as well as photographic surveys documenting battles and their aftermath with repercussions on civilians and the cityscapes.

In the magazine of December 22, 1941, after the Japanese attack on Pearl Harbor, *Life* included stunning illustrations of the globe "as seen from the Moon" to describe salient strategic locations on the new battlefield in the Pacific Ocean. The vastness of this unexpected arena of war led the editorial board

Fig. 9 Cover and three pages (32-60-61) of the February 22, 1943 issue of *Life* entitled *Photo Reconnaissance*. Dmitri Kessel took the photo on the magazine cover.

of *Life* to publish in the same issue a poetic and geographical overview of "the oldest, deepest, and bluest sea," where it "lies half of the world's water" and "sit great cities whose life depend on the sea." It followed a visual list of American and Asian cities magnificently presented through aerial views.

In order to be updated to the last technological innovation, *Life* dedicated the cover of the February 22, 1943 magazine to "Air Reconnaissance," with a Dmitri Kessel's picture showing an army air observer. An article in the same issue explored the training of the "Eyes of the Army" at the Brooks Air Force Base in Texas, explaining the principles of photo reconnaissance, and engaging readers through titles like "What is this?" (Life 1943: 32), asking the public to interpret military documents (Figure 9).

This entanglement between military experience, commercial photography, and avant-garde visual strategies distinguished American propaganda, in which the publishing techniques started in WWI were strongly enhanced. Edward Steichen, a fine art photographer famous in the American art scene, commanded the Photographic Section of the American Expeditionary Forces in WWI, and became responsible of the Naval Photographic Institute in WWII. In this latter role, he directed the full-color documentary *The Fighting Lady* (1944), filming the life on board of an American aircraft carrier. In the plot, the monotonous routine of the seamen on the ship is interrupted by diverse attack targets (Marcus Island, Kwajalein, and Saipan), in a "climax of battle and destruction." During the scenes of strikes, spectators watch real technicolor footages shot by gun cameras mounted on aircrafts and the narrator reminds them "our eye is now the very eye of the flying airplane." A series of these impressive frames, showing hit Japanese planes that crashed into water, was also reproduced on the magazine *Life* (March 5, 1945: 76–78) in the section "movie of the week," in which the carrier, the Fighting Lady, is described as a heroine. *Life* recognized the spectacular power of these shots, dedicating two entire pages to the colored photographs. The black silhouette of the wounded plane, silvery gasoline vapor, flames of the explosion, and the orange glare are recorded plunging into the blue sea (Figure 10).

Towards the end of the conflicts, however, the content of *Life* partly changed, and destruction and dead bodies substituted spectacular aerial views, strategic maps, and technological analysis. On June 4, 1945, Margaret Bourke-White's pictures showing the effects of fire-bombing on German towns and cities (Nuremberg, Mainz, Essen, and Jülich) were published with the title "The Battered Face of Germany" (Life June 4, 1945: 21–27). Bourke-White took these oblique panoramic photos during a U.S. Air Force combat mission, showing "dunes of rubble" caused by both precise strategic targets and carpet raids (although the controversial bombing of Dresden was not mentioned

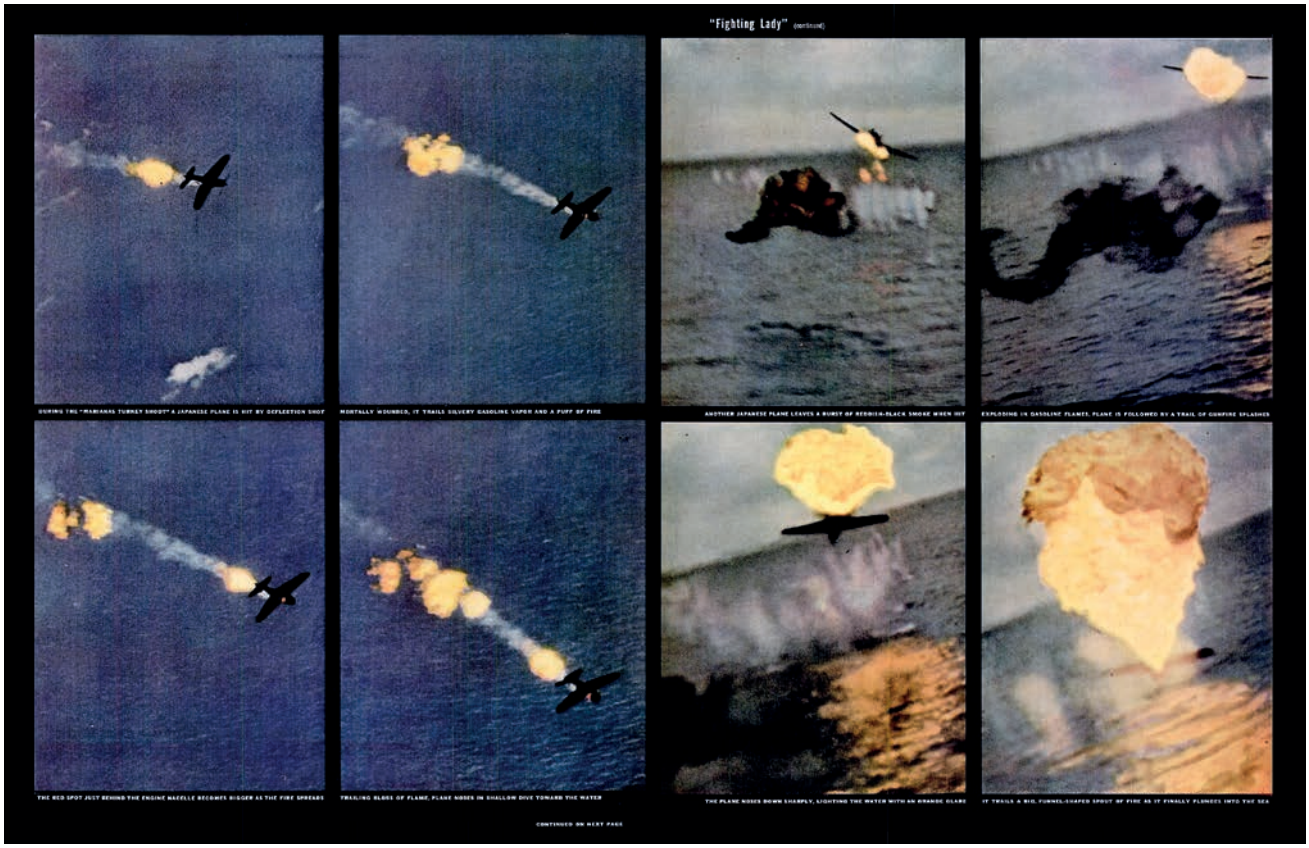

Fig. 10 Frames from the movie *The Fighting Lady* published in *Life* magazine (March 5, 1945, pp. 77–78).

in *Life*). The U.S. Strategic and Technical Air Forces employed then this material for the analysis of damage. Bourke-White also documented the atrocities of the Nazi regime in Buchenwald in May 1945 issue. Regarding the publication of pictures of war's death and destruction in Spain, China, and Germany, *Life* states: "Dead men will have indeed died in vain if live men refuse to look at them." A few weeks after the atomic bomb drop on Hiroshima and Nagasaki *Life* reported full page aerial views showing the cities before, during, and after the bombing. In contrast, the magazine only published the total devastation from the perspective of the Japanese civilians in September 1952, when the military censorship ceased (Lee 2011).

The articles published in *Life* magazine, as well as the ones on *BIZ* during the WWI, demonstrate that civilians were not only conscious of the evolving technological apparatus used by armies and of possible effects enemy's weapons could cause on their lives, but they were also constantly (although partially) informed of the warfare on the other sides of the globe. The goal of the illustrated press was to show these distant scenarios, transforming farness into closeness.

During the World Wars, techniques of propaganda and censorship employed specific communication strategies, choosing aerial photography to demonstrate the scientific and technological superiority of the national armed forces and to aestheticize, namely anesthetize, violence. Indeed, military strikes and bombings at the expense of the enemies were mainly portrayed by means of spectacular images visually pleasing, while close-ups of causalities were shown only after rival attacks, in order to condemn the atrocity provoked by the enemy and rise emphatic reaction in the magazine's readership.

In this period, visual mechanisms used in warfare (analysis of maps, interpretation of photos, aerial images before and after an event) started also to be applied as common tools for reporting news in the commercial press. Moreover, photographs sponsored an ambivalent idea of landscape that, by the end of WWII, could be categorized in the forms of (1) scenarios as sources of national identity, (2) remote and exotic landscapes photographically captured and distributed for the first time (3) sectioned terrains and portions of seas available to be interpreted and analyzed, and (4) cityscapes that lay in ruins. Often these four types of landscape coexisted together at the same time in German and American magazines, sometimes even in the same issue.

4. God's-eye view and bird's-eye view

4.1 Frampol

9 September 1939
vertical angle photograph: Frampol (Poland), ca. 4500 m on the ground

> He knew that the wide world was full of strange cities and distant lands, that Frampol was actually no bigger than a dot in a small prayer book; but it seemed to him that his little town was the navel of the universe and that his own house stood at the very center. (Singer 1982: 41)

18 September 1939
vertical angle photograph: Frampol (Poland), ca. 1275 m on the ground

> One morning, while Abba was wondering among his thoughts, he heard a tremendous crash. The old man shook on his bones: the blast of the Messiah's trumpet! He drooped the boot he had been working on and ran out in ecstasy! But it was not Elijah the Prophet proclaiming the Messiah. Nazi planes were bombing Frampol. Panic spread through the town. [...] Flocks of birds flapped about in the sky. The forest was burning. Looking down from the hill, Abba saw the orchards under great columns of smoke. The apple trees were blossoming and burning. (Singer 1982: 50)

Frampol is a small town in the southeastern corner of Poland, circa 70 km from Lublin. Just few people know its troubled history.

Some literature aficionados could remember Isaac Bashevis Singer's brilliant descriptions of the town in some of his short stories. In *The Little Shoemakers*, for example, he portrays Frampol as an important center of artisans with a significant Jewish community, narrating the series of tragic events that struck the city at the end of the thirties. Besides Singer's tales, however, most of the visual records of the area before 1939 are lost. One picture still available is a plan of the town dating back to September 9, 1939. In this aerial photograph, Frampol's unique baroque street layout stands out: three concentric rectangles are organized around a large central square resembling the board of the game Nine Men's Morris. Today, the grid plan can still be identified in Google Maps' satellite image, although the eighteenth-century town hall does not stand at the center of the wide, regular marketplace anymore.

Just a week after the snapshot, on September 18, 1939 a new picture, taken from the same point of view, features a completely different scenery. The grid of streets, which constituted the visual focal point of the first photograph, has disappeared. In the new tragic topography, the eye of the viewer cannot anchor to any gridlines because most of the landscape seems to be rubbed out. What looks like an erasure is actually the catastrophic effect of a raid carried out by the *Luftwaffe* (Figure 11). On September 13, 1939, the German Air Force dropped high explosive bombs and incendiary bombs, destroying ninety percent of the buildings. The human losses were relatively small due to the fact that the population already experienced a first small bombing and was hidden outside the city (Puzio 2009).

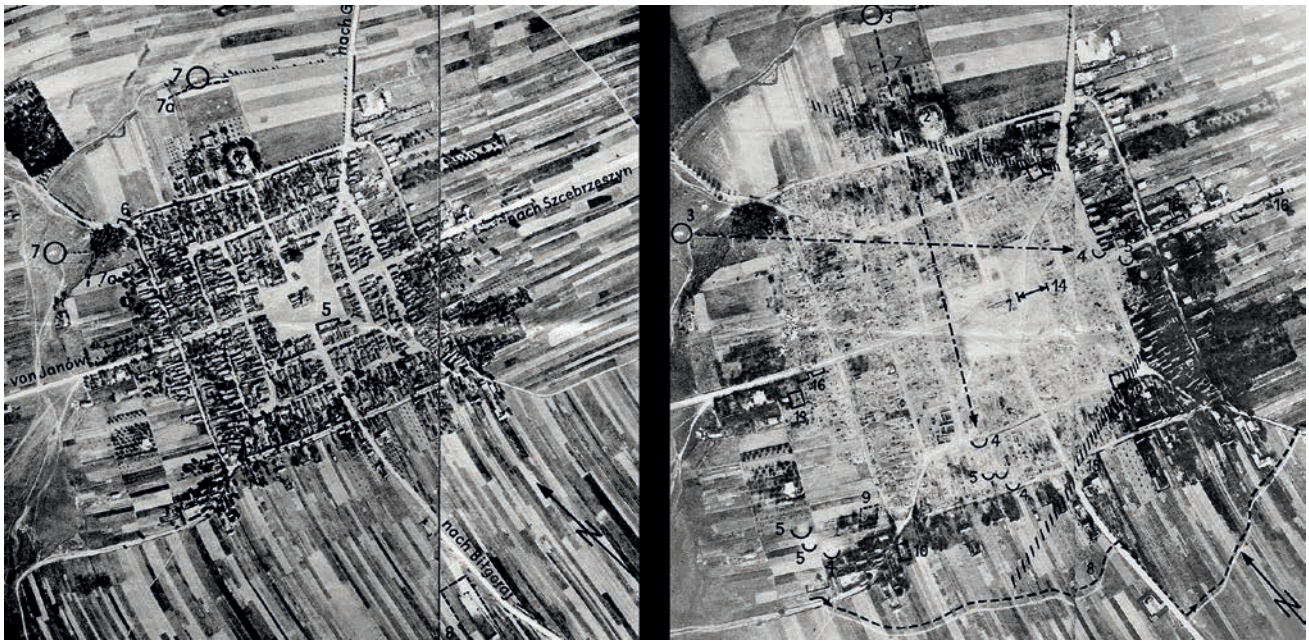

Fig. 11 Frampol before and after the German *Luftwaffe* bombing raids in September 1939. The pictures were first published in *Freie Welt* (August 3, 1965), a magazine distributed by Berliner Verlag in East Germany.

Both pictures were therefore taken by a German pilot or an automated camera mounted in reconnaissance planes. According to the photo interpreter Harry Hahnewald and the pilot Manfred Otto, Frampol functioned as military experiment, where the effectiveness of new weapons was tested (Freie Welt 1965: 8–15). The aerial view that immediately preceded the violence served to define the precise target, while the second record allowed to measure the consequences inflicted by the *Luftwaffe*'s attack. The city did not fulfill any military or strategic function: neither railway nor factories were present, and the Polish army, whose specific divisions were retreating in the eastern regions of Poland at that time, did not have any units stationing in Frampol. Therefore, German aviation was not exposed to any antiaircraft fire and could freely test the bombs on the city.

Although the tragic history of a small town such as Frampol was not reported by any newspapers before the 1960s, and – unlike the terror bombing of Guernica (another testing ground of the *Luftwaffe*) – definitely did not have an international echo, the two aerial photos contribute to problematize the type of gaze developed in the warfare. If Singer's tale depicts the total destruction at close range, the photographs reverse the perspective, showing the detached viewpoint of a "hunting" eye, product of military reconnaissance. Frampol was firstly detected by the penetrating lens of the camera and then was selected as a target because its aesthetic features induced to visibility. The town's urban planning, based on organizing axes culminating at a central focal point of the square, made it an evident landmark clearly discernible from the air, a bullseye. According to Ernst Gombrich's theory in *The Sense of Order*, a book dealing with psychology of perception in relation to patterns, the break of a monotonous repetition makes an object worthy of attention (Gombrich 1979). Moreover, Frampol's visible obliteration after the bombing would have proved (as it indeed did) the degree of effectiveness of the *Luftwaffe*'s weapons. This attraction of the eye to discontinuity – which was the reason why Frampol was noticed – required cities to use camouflage during the warfare. Thus, in the World Wars painters were not hired to document the war (the sense of reality given by photo reporters was much more powerful), but they were recruited to implement camouflage techniques in the landscape.

In a completely different field, the same selective dynamics of sight guided designers and editors of the illustrated magazines to publish a photo instead of another, influencing, and sometimes manipulating, their audience. Probably, even the photos of Frampol – which first appeared in 1965 on *Freie Welt*, a magazine distributed by Berliner Verlag in East Germany – were published because of their eye-catching features. Although many other bigger cities were bombed in Poland during WWII, the GDR magazine decided to denounce the crimes of the *Luftwaffe* that occurred in 1939 through this visually attractive aerial material representing a small, remote community. Firstly, the pictures were presented as truthful documents, secondly, but not less significantly, covering more than one page of the magazine, the two photos had a big impact on the readers, who were led to scrutinize differences between the first and the second shot. The Nazis did this scrutinization as well.

The sharpness of reconnaissance aerial photography indicated an omniscient God's-eye view, a unidirectional gaze that in the visual arts has been

theorized by Norman Bryson's *The logic of gaze* as well as analyzed by Martin Jay's *Scopic regimes of modernity*. A way of seeing that in Bryson's terms is a gaze (rather than a glace) removed from the personal experience of the observer. A unified vision and all-dominant perspective that has been embodied in the Western tradition, theorized in books like Douhet's *The Command of the Air* (1921), and tragically realized in the Second World War through the transcendent experience of verticality above all.

Therefore, if Frampol was bombed because it visually appeared from the sky the perfect testing ground where measuring the level of destruction of a strike, for the same visibility its tragic story came out on the pages of the magazine. While the readers watch the scene from the elevated vantage point of the offenders, the victims experience is not represented. Since most of the inhabitants of Frampol perished in the Holocaust, only proposing Singer's reconstruction in the short story *The Little Shoemakers* can give voice to the people who from below could only look up to the sky.

4.2 Philosophies of Aerial Photography

"Everything is equal in front of the lens" came to be a recurring phrase at the beginning of the twentieth century, and the cruel context of the technological battlefields required the rationality and functionality of lenses able to capture everything without discrimination. In military reconnaissance, the camera was introduced to compensate human visual imperfection, or, to use Gombrich's theory, this device was developed to counterbalance the human predisposition to be attracted only by certain visual features. Unlike the observer, the camera was able to penetrate spaces previously inaccessible to human perception, as well as having the power to make eternal a fragment of time. This section of time and space could then be enlarged offering unexpected details that the human eye had not previously noticed. In this context, photography started to be an analytical tool, able to provide scientific objectivity and, as shown in the previous sections, it became the primary support for military raids.

The identification of camera and gun has been widely described by intellectuals: Susan Sontag used the expression "War-making and picture-taking are congruent activities" (Sontag 2003: 53), Paul Virilio with the famous term "watching machine" associated "the eye's function being the function of a weapon" (Virilio 1989: 19). However, it was the controversial German author Ernst Jünger who pioneered this way of thinking when in 1934 wrote:

> The photograph stands outside the zone of sensitivity. It has a telescopic quality; one can tell that the event photographed is seen by an insensitive and invulnerable eye. It records the bullet in mid-flight just as easily as it captures a man at the moment an explosion tears him apart. This is our peculiar way of seeing, and photography is nothing other than an instrument of our own peculiar nature. (Jünger 2008: 39)

As claimed by Jünger, photography expresses detachment and cruelty, qualities of the vision that emerged during WWI and that, to a certain extent, continue nowadays. At present, remote controlled aircrafts occupy an ever-growing space in commercial and recreational fields of Western societies, and the expression *drone* is widely associated with suggestive panoramic photos, which increasingly circulate in the news, on YouTube, in documentaries and movies (Zimmer 2013). In many parts of the world, people access spectacular vistas of remote wild lands through high-resolution displays on mobile phones, TVs, and computers that offer sharp pictures with unprecedented degree of details. In order to produce such images, digital cameras are mounted to UAVs piloted remotely and sold as hobby gadgets for relatively accessible prices.

By contrast, in specific countries, like Syria, Pakistan, Yemen, and Afghanistan, the term *drone* assumes a radically different connotation. After 9/11, the use of UAVs for surveillance and targeted killing dramatically escalated as a consequence of the global war on terror. When a mission is too "dull, dirty and dangerous" for humans (Tice 1991: 53), digital camera's sensor replaces the eye of the pilot by recording inaccessible areas from above. While surveilling at video screens from a control station, the operator can drop missiles able to incinerate bodies outright. The investigative journalist David Rohde, kidnapped by members of the Taliban in November 2008, describes the experience of being threatened by American drone strikes during his captivity: "The drones were terrifying. From the ground, it is impossible to determine who or what they are tracking as they circle overhead. The buzz of a distant propeller is a constant reminder of imminent death. Drones fire missiles that travel faster than the speed of sound. A drone's victim never hears the missile that kills him" (Rohde 2012). While the victim does not realize he/she is being targeted, the sensor operator is aiming the laser marker of a missile, which can only be spotted by specific troops' vision goggles. This beam, which Marines call the "Light of God," announces that whoever or whatever it is focused on is about to be destroyed (Fast 2011).

The constant mediation of the camera, whose lens functioned as a shield between the observer and his/her surroundings, generated a cold gaze that changed the ability to experience pain. Because of the entanglement between photography and military applications, modern perception itself has been assimilated in the form of warfare observation. This kind of detachment not only can be perfectly applied to the war at distance, such as combatted by drones, but it has become the general way in which reality is perceived.

> Today, important events are engulfed by photographic lenses and microphones and lit up by bursts of flashing cameras. Often the event itself is completely subordinate to its "broadcast"; it thereby turns to a great degree into an object. We have grown accustomed to political trials, parliamentary meetings, and contests whose real purpose is to be the object of international broadcast. The event is bound neither to a particular space nor to a particular time, because it can be shown anywhere and as often as one likes. These are the signs of an immense detachment […]. (Jünger 2008: 40)

Photography's status as a mass medium of visual communication from the beginning of the twentieth century has turned into a real ubiquity of photography with the introduction of digital technology. The democratic nature of photography and its popularity as a medium – attributable to versatility, automatism, and realism – originated anxieties about the rampant photo-inflation. If the photographic impact undeniably enhanced the field of human vision, changing perspective on space and time – through high level of magnification, wide angle, bird's-eye view, fish-eye sight, cosmic vista – the overwhelming production of pictures also created anaesthetization instead of emphatic proximity.

Nowadays, the revaluation of photography as essential tool in the contemporary discourse surrounding the climate change (Zylinska 2017) has posed the question: does photography represent a form of control, mechanization, and standardization of vision or it could generate a more inclusive and less anthropocentric view on the world? In other words, could photography lead to forms of attachment to, instead of detachment from reality?

Vertical aerial photographs capture the abstract flat land without borders revealing vivid images composed by patterns, which resemble the geometric and natural motives utilized by the so-called applied arts. Pilots have often described the Earth's surface seen from above as a "flat carpet" and the British archaeologist O. G. S. Crawford, involved in aerial reconnaissance along the Western front in WWI, wrote that "the distant view is necessary to convert chaos into order" (1928). Crawford used also the metaphor of the cat's vision on a Persian rug, whose motif is blurred by the proximity of the animal, compared to the "aerial view" of a human being able to recognize in those indiscernible colors the overall shape of an ornamental design. In some disciplines, such as archeology, the distance of aerial photographs supports the ability to "see all" at a glance giving a powerful spatiality that reveals unexpected traces on the land.

Aerial survey has also been considered the most suitable mean to capture large-scale geographical events, offering a holistic approach to landscape interpretation. In the 1930s, for instance, the environmental disaster of the Dust Bowl has been amply photographed from the air both by the Fairchild Aerial Surveys Corporation and by Margaret Bourke-White, who took iconic oblique aerial photos of the Great Plain. In the 1950s, the aerial photographer William Garnett documented the emerging suburb of Lakewood in Los Angeles, the so called "instant city" in which 17,500 homes were erected within three years. Later, Garnett's pictures were adopted by the American environmental movement to criticize a sterile type of urbanization that destroyed nature. Therefore, bird's-eye views were employed to document unexpected morphologic transformations of the landscape caused by the increasing number and scale of human interventions, such as exploitation of natural resources, urban planning, industrial development, and use of biological and nuclear weapons. The optical and mechanical precision of new cameras portrayed the topography of landscapes dominated by rigid and artificial geometries that have replaced the wilderness areas. Today, aerial photography is regularly used as a scientific tool, for example to measure the decreasing size of glaciers (Doyle 2009). Photographs from drones are often intended to raise public awareness on the impact of human intervention on the Earth (e.g. Tom Hegen's photos in the 2018 book *Habitat*).

The dominant character of current scholarship aims at driving the cold, hunting, distanced and penetrating gaze to an ecological eye (Patrizio 2019).

The historical moment that has matured a new and revolutionary point of view towards the environment (i.e. this ecological eye) is represented by the famous photo known as *Earthrise* (1968). It was the first time that human beings admired an external perspective of their birthplace; until mid-1960s nobody knew what color the planet was. Later on, the Earth colors became even more worldwide celebrated through the snapshot *The Blue Marble* (1972). In the context of the Cold War, when superpowers started the space race, the American space mission Apollo 8 (1968) aimed to identify lunar landing sites by means of high-resolution photography. Among other tasks, the astronauts could use both handheld cameras and automatic devices to analyze the lunar surface. In a primarily scientific and technical space program the type of pictures such as the Earthrise were categorized as "low-priority target of opportunity" (Cosgrove 1994: 274). However, the registration of the dialog between the astronauts (William Anders, Frank Borman, and Jim Lovell) while taking the snapshot demonstrate the astonishment for the scene appearing in front of them (NASA 2013):

> Anders: Oh my God! Look at that picture over there! There's the Earth coming up. Wow, is that pretty!
> Borman: Hey, don't take that, it's not scheduled. (joking)
> Anders: (laughs) You got a color film, Jim?
> Hand me a roll of color, quick […]
> Lovell: Oh man, that's great!

The *Earthrise* did not function as a "work photography", to use the expression Colonel Stanley applied to imaging in the military context, especially because it did not have any particular practical value for the mission. Nevertheless, it contributed to re-imagine the position of humankind in the world. From the most remote place human capacity could reach (in a disciplined and regulated environment not so different from a military one), the emotional state astronauts experienced was not of a mastering God's eye view; it seemed to be instead the excitement of the dream coming true: a bird's-eye view become cosmic. It was an emotive feeling in front of a sublime tiny blue dot placed in the depths of the infinite darkness.

5. Conclusion

The entanglement of aerial photography and warfare, entrenched during the World Wars, has widely influenced people's ways to perceive the landscape. From a technological point of view, the need of photoreconnaissance for intelligence and mapping boosted the combination of photography and flight, enhancing the production of light devices, specific optics, and photogrammetric analysis. The concept of visibility-invisibility became fundamental in WWII, and new camouflage techniques were developed in order to avoid interception by the powerful eye of the camera.

In societies, like Germany and the U.S., where visual communication already played a significant role, the commercial press employed a high amount of spectacular aerial photographs, showing military technological innovations that symbolized national superiority. The aestheticization offered by the distant view simultaneously allowed the anesthetization of violence. Aerial photography was recognized as an efficient tool to propagandize the conflict because it embodied these two properties.

Moreover, the German magazine *BIZ* and the American *Life* – two famous illustrated periodicals that shared the idea of "seeing life in pictures" publishing mainly lifestyle news – started to adopt new military visual techniques (e.g. aerial maps, visual surveys, and photo interpretations) as persistent communication strategy to illustrate the most diverse topics during and after the war.

Thus, aerial militarized visualities influenced every layer of the society, transforming people's way of observing and interpreting territories, meanwhile creating new aesthetic canons in representing the landscape. The population underwent *a training of the eye*, which was intended to define an ambiguous, enhanced, and multifaced idea of landscape. By the end of WWII, the category of landscape included (1) scenarios as sources of national identity, (2) remote and exotic landscapes photographically distributed for the first time (3) sectioned lands or portions of seas available to be interpreted and analyzed, and (4) cityscapes that lay in ruins.

Evolving in the military context, the peculiarity of aerial photography is necessarily embroiled with the idea of cold, hunting, distanced and simultaneously penetrating gaze; a mastering God's-eye view, which implies a way of controlling and dominating space, that geographers, cultural theorists, and art historians have amply described (Adey 2013; Bryson 1983; Cosgrove 1994; Della Dora 2013; Jay 1993). This connotation cannot be overlooked in a reflection on the essence of aerial photography, even when, in the contemporary discourse surrounding the climate change, automatized sophisticated technologies give the impression society has entered an era of "nonhuman vision" that is able to go beyond the detachment of human kind from its habitat.

However, as a technology developed to potentiate the field of vision, and to make visible the invisible, aerial photography generates a strong feeling of wonder: an extreme surprise that does not necessarily implicate superiority (God's-eye view), but simply provokes an unexpected emotion in front of an unforeseen scene (bird's-eye view).

This ambivalence, which constitutes the photographic act, metaphorically represents the condition of the humankind: hanging in the balance between seeing as a synonym for knowledge-power and feeling as a metaphor for knowledge-closeness.

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