



Le Corbusier, Marcel Griaule, and the Modern Movement: exploring the habitat from the airplane

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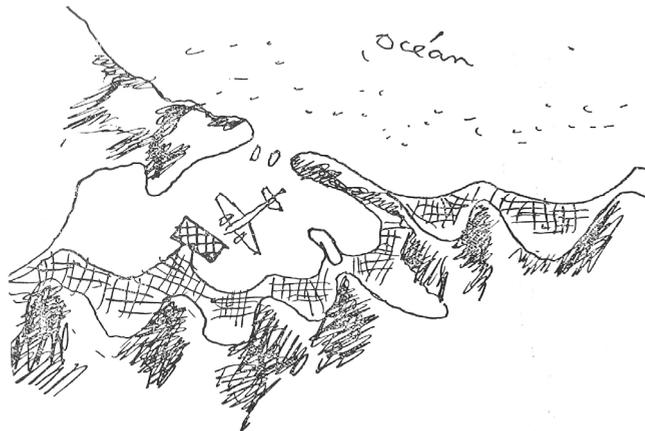
Abstract After World War I, aerial photography appeared as an extension of the traditional “view from above”, established from the balloon flights over Paris by photographer Nadar in 1858. From the outset aerial photography served as a way of describing the “real” but only after World War II did it become a privileged instrument for planners and architects.

Using a historical and multidisciplinary approach this paper outlines the focal steps that led to the institutionalization of aerial photography as a tool for urbanism and architecture today. After a brief history on the birth of aerial photography, the paper defines Le Corbusier’s penchant for airplanes and the bird’s-eye view, and aerial pictures delineating the African habitat exhibited by the French anthropologist Marcel Griaule in the Musée de l’Homme. The paper continues with an examination of the promotion of the aerial view as a tool for planning made by social geographer Chombart de Lauwe, and the institutionalization of the view from above as a central tool for research on habitat amongst the Modern Movement.

The paper shows how over the years the aerial viewpoint, which is extremely far from the ground, has increased the natural “distance” of the photographic medium, while simultaneously enlarging the assumed objectivity of photography and thus the inherent representation and manipulability of habitat. This research aims to shed light on the contribution aerial photography has had in the construction of the modern design visual culture. It also hope to highlight how aerial view has imprinted our contemporary view.

Fig. 1 Le Corbusier’s sketch for the airport of Rio de Janeiro.

(Source: Le Corbusier, 1941)



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Introduction

The act of seeing from above stimulates unusual perceptions. The aerial view brings with it a liberation from the constraints that overwhelm our body at ground level, in addition to the elevated physical distance from the usual context. The flight has been man's long-cherished dream: man has always been inebriated by the emancipation from the laws that bind us to the ground and acknowledged the context of visual global domain. Looking down from a plane at the earth shrinking underneath, man embraces immensely distant spaces and experiences his own finitude: the aerial photographic view distances reality, and architecture, from the observer, while it offers a critical and dynamical reading of it. From the plane you discover the territory, you enter into the beating heart of geography and history, and you understand the importance of things in their context. Images from above, filtered through the medium of photography, result as an interpretation of world: the camera becomes an extremely powerful tool, and an extraordinary memory support that gives back the valuable fragments of a cultural landscape.

My work moves away from non-historical studies on the use of aerial photography to indiscriminately inform city planning and promote visual landscape consumption today.¹ It starts from the historical framing of the view from above, necessary in understanding that aerial photography - as an extension of the "traditional" view from above from buildings or hills - has served from the outset as a machine of the "real", and as an increasingly privileged instrument of the projective design of the planners. I focus on the ontological together with other considerations on the "bird's-eye" view's development, considering that the aerial viewpoint tended to increase the "natural" distance inherent in the photographic medium, and thus to increase its assumed objectivity and its inherent manipulability.² My approach also differs from studies that posit and superimpose unilateral contemporary cultural conventions on the reading of the development of the aerial tool. My aim is to reengage the multidisciplinary development of aerial view alongside diverse evidence on its holistic use, according to the time frame specific to when the aerial view developed. In this way I bring urban planning, landscape design, aerial photography and history into direct engagement with each other, enriching all of them within the process.

By focusing on how tools represented landscape and the city from above, this essay has, I hope, both complemented and countered the rhetoric of "discovery" the world from different perspectives, and has given a deeper insight into Western visual culture. My research sets out from the belief that enlarging the discussion on aerial photography will stimulate and implement new directions for theoretical approaches and research on landscape design, city planning, and contemporary vision.

Hot-air balloon and Kite photography: first steps towards the spread of aerial photography

Renowned for decades, the view from above has become today so ingrained in contemporary visual culture that it is hard to imagine our world without it. However, aerial photography - as we know it today - has been possible only since the late 19th century thanks to the convergence of several factors (Chevallier, 1963): the human "flight", the birth of the photogrammetrical science, photographic tool development, and the birth of the airplane.

Human "flight" in the West has been possible since the development of the hot-air balloon by the Montgolfier brothers in the late 18th century; but photogrammetry was born only in 1849, when Aimé Laussedat, engineer of the French Army, effected a survey of the Pyrenees, using a

¹ My interest in aerial photography started during my Ph.D. in design architecture, undertaken at the IUAV of Venice, Italy (2009-2012), on the relationship between modern and Dogon architecture. The research leading to these results had received funding from the People Programme (Marie Curie Actions) of the European Union's Seventh Framework Programme (FP/2007-2013) under REA grant agreement n.326271. I wish to thank also the Bibliothèque Éric-de-Dampierre (Fonds *Marcel-Griaule*, and *Solange-de-Ganay*, MAE, Université de Paris Ouest, Nanterre La Défense, France) which provided some of the images for the research.

² For the relationship between image and representation see Ginzburg, 1998.

lightroom and a darkroom to describe the landscape around him. Only after these two achievements was the world ready for the birth of aerial photography, which debuted 1858, when the famous French photographer Gaspard-Félix Tournachon (known as “Nadar”) patented his new system of aerostatic photography developed from a balloon tethered near Paris. Two years later, during the American Civil War, the first aerial photos to document territorial surveys behind enemy lines were taken from hot-air balloons in Boston. In the following decades there were many developments in photographic techniques and numerous experiments. In the late 19th century, Frenchman Arthur Batut had great success with aerial photographs taken from kites: in 1889, the magazine “La Nature” published an excellent aerial picture of his house taken that same year. In 1906, thanks to the new kite aerial photography, numerous photos were taken in San Francisco during and after the fire that destroyed the US city.

However, the most important development in aerial photography came about in the context of surveillance operations during World War I and II. In the late 19th and early 20th century, with the invention of the airplane in 1903, military forces of all major western countries were endowed with the necessary means in obtaining aerial photographs to detect troops in enemy territories, often in an extensive way: in 1917 as instance the Austrian army aviation produced an average of 4,000 photographs a day for military inspection. Numerous other uses of aerial photography developed from these experiences. Richard Byrd used it to draw up the first map of the South Pole’s limits in 1926 and, in 1936, the Shell company used aerial photography with industrial purposes in New Guinea, where aerial photogeological campaigns were easier than field surveys because of indigenous hostilities.

Le Corbusier and the bird’s-eye view

With regards to the field of modern architecture, it is well known that since the ‘20s Le Corbusier had a penchant for airplanes: the illustrations and text in *Vers une architecture* (Le Corbusier, 1923), and his photographic album *Aircraft* (Le Corbusier, 1935), are only a fraction of this involvement.³ On his first trip to South America in 1929, Le Corbusier took his time, travelling by ocean liner to Montevideo and Buenos Aires, and then mostly by plane,⁴ visiting Buenos Aires, São Paulo and Rio de Janeiro. From above Le Corbusier noted all the landscape features of Latin America, the colonial settlements, the forests, the rivers, and the pampas. It was on this first trip that he produced the first sketches of his plan for Rio de Janeiro - 60 kilometres of elevated highway with housing underneath (Fig. 1).

According to Le Corbusier, the evolution of the airplane accelerated the speed of travel, continually shrinking the size of the globe, and accelerated the speed of human transformation (Colomina, 2011). Through his experience in South America the architect became endowed with a new eye - the eye of a bird - and a new view - the aerial view. According to him, rational and modern intelligence had acquired knowledge by analysis, comparison and deduction which had suddenly become a matter of total experience for the eye. “*Being neither technician nor historian of this amazing adventure [...] I let myself be carried off on the wings of an airplane, make use of the bird’s-eye view, of the view from the air, to which end I directed the pilot to steer over cities*” (Le Corbusier, 1935). In his opinion aerial photography showed up what was invisible from ground level, demonstrating the overcrowding of cities: the airplane’s eye revealed to him a spectacle of destruction and degeneration of cities and countries in the post-war period. In describing the airplane “lesson”, using his natural eloquence, he said : “*From the plane I have seen landscapes that might be termed cosmic. What an invitation to meditate, what a reminder of the earth’s fundamental truths*” (Le Corbusier, 1930). Also, during a flight over the Atlas Mountains in 1933, he added: “*The flight of a plane provides a spectacle with a lesson – a*

³ Another important text where Le Corbusier demonstrates his interest for airplanes - and aerial view - is *Cathedrals*, published after his trip to the United States in late 1935 (Le Corbusier, 1937).

⁴ On this trip Le Corbusier met many pioneer aviators such as Jean Mermoz and Antoine de Saint-Exupéry.

philosophy. [...] The non-professional who flies (and so whose mind is empty) becomes meditative: he can take refuge only in himself and in his own works. But once he had come down to earth his aims and determinations have found a new scale" (Le Corbusier, 1935).

In the Corbusian iconography of the early '20s, the airplane symbolized modernity and the virtue of modern technology, both analogues in production methods. From 1929 on (year of his first trip to America), it became a technique and visual instrument used in urban planning and architectural design, it was a tool for comprehending the cultural repercussions of industrialization, used in spreading his "evangelical" message over great distances (Bacon, 2001). Over a period of only a few years, in the airplane he had found both an architectural model and a planning machine: aerial photographs became more than just a "simple record" of architecture, they stood in for the planner's eye view, as a key to the city form (Vidler, 2003). This new perception was not only to inform Le Corbusier's sketches, but also his plans for Rio, North Africa and its colonial occupation of the landscape.⁵ The large coastal outlines of South America and Africa with their curving rivers, became, for Le Corbusier, the starting point of a new urbanism, intended not only for the eyes of man on the surface of the earth but to be admired from above through a definite concern for the "fifth façade".

Marcel Griaule: ethnographic campaigns and aerial photography in sub-Saharan Africa

The rapid growth of aviation during the interwar period reshaped the perception of the world, from the Western countries to the Southern colonies. Aerial photography, which recorded in precise detail the realistic form of landmasses, seas, deserts, and mountains, perfected the process of mapmaking and enriched the documentary archive of the planet. In the great empires of the late 19th century the airplane internationalized cartography and also became a tool for exploring the colonies. In the '30s in France, the birthplace of ethnological science, there was an amplified example of this phenomenon. Since 1931, at the beginning of the famous Dakar-Djibouti mission, the French anthropologist and former aviator, Marcel Griaule, has conducted a series of campaigns in the African colonies to promote the study of indigenous populations in the field. During these expeditions Griaule collected several pieces of art, exhibited in the Musée de l'Homme in Paris. He also tested new methods and tools of ethnographic investigation, including the use of the aerial photography (Jolly, 2001).⁶ Referring to ethnology in 1937 Griaule wrote: *"This discipline deals with the great number of documents concerning with the adaptation of a population to its soil. Their constitution requires more than a good map: a cadastre containing not only usual information, but also clarifications on indigenous customs and techniques [...] Only the aerial photography enables the ethnologists to rapidly records them and to improve their researches"* (Griaule, 1937).

Griaule's aerial photography was undoubtedly a tool for colonial oversight and control, however it soon became a means of understanding the indigenous populations in more depth (Griaule, 1947). *"From the plane, we fixed the topographic depth and the depth of consciousness"* (Griaule, 1943). Griaule's photographic aerial campaigns in Africa not only produced some of the most expressive aerial pictures of the territories and peoples of Africa during the '30s, but also, for the first time, they showed the observers from the Western world the Sub-Saharan territories and the African populations' adaptation to the African landscape, the geography of the area, the natural vegetation, the fauna, and the human modification of land. Griaule's photographs highlighted the relationship between human habitat and natural landscape, and the urban, geographical, economic, and social capacity of landscape. Aerial photography allowed Griaule to

⁵ According to some authors the urbanization concepts of Rio and the Plan Obus for Algiers *"could only have been dreamed up in an airplane"* (Moos, 1968).

⁶ *"The all material results (of the Sahara-Cameroon Mission) are: thousands of excavated objects. A thousand ethnographic objects. 6000 ethnographic papers and 3000 photographs including 600 aerial pictures [...]"* (Lebeuf, 1937).

study the African cultures and peoples within their habitat, while as observer he transformed aerial photography into a strategic vision into discovering the secrets of the African population.

***La découverte aérienne du monde* by Chombart de Lauwe**

In 1936, Griaule took off for a journey of exploration of Northern Cameroon, together with the 22 year old French sculptor Chombart de Lauwe. “*We crossed the Sahara in a little airplane, driven by an old friend and aviator of World War I*” (Chombart de Lauwe, 1996). The mission lasted for two and a half months, during which time the two men took numerous aerial photographs of the sub-Saharan landscape, which were later used by Griaule in his writings on the Dogon people (i.e. Griaule, 1938).

In 1948, by now a renowned anthropologist, Chombart published his book *La découverte aérienne du monde*, where he declared the aerial view as being “*the vision of modernity*” (Chombart de Lauwe, 1948). It contained more than 300 aerial photographs, including pictures taken in collaboration with Griaule in 1936, Chombart’s texts on the importance of aerial photography in the study of the relationship between man and his habitat, technical notes, and an insertion by Griaule on the ethnological use of aerial photography (Fig. 2). The introduction of the volume was written by French geographer Emmanuel de Martonne, author of *Géographie aérienne* (Martonne, 1948), and strong supporter of the use of aerial photography as a tool in geography.



Fig. 2 Photographic mission over Sudan. (Source: Chombart de Lauwe, 1948)

During the period of his first involvement with aerial photography, in the '30s and early '40s, Chombart's research was not yet focused on French society. His interests were in a state of continuing change, reflecting the competing influences of his anthropologists-mentors. In his early years Chombart worked with Griaule, he analysed the relationship between religious representations and material culture and collected aerial photographs for the Musée de l'Homme. Only at the end of World War II, in 1949, did he start his famous analysis of the city of Paris. It focused on the concept of urban habitat and made extensive use of aerial photography: like Griaule, the aerial view became a tool for description, study and analysis of the habitat, and after World War II an instrument for the practice of urban planning *par excellence* for him. In 1936, in the introduction of the first volume of *Famille et habitation*, where the African aerial photographs taken together with Griaule appeared, Chombart wrote: "*The house can't be separated from the material life framework of a society in its space, that is from its habitat. [...] Studying the habitat from this perspective, is as looking at the image of a society written on the soil*" (Chombart de Lauwe, 1959).

The role of aerial photography in the definition of the modern habitat

While carrying out his work on Paris, Chombart de Lauwe wrote the book *Paris et l'agglomération parisienne* (Chombart de Lauwe, 1952), and interviewed famous and numerous modern architects (Zehruss, Pinguss, Auzelle - his friend since 1937 -, Lods, Wogenscky and Ecochard), together with Le Corbusier. In this period, his work on the relationship between social science and urban morphology, together with aerial photographs he published and Griaule's work on Dogon culture, began to spread among the members of CIAM, within the Modern Movement and Team Ten. For example, in the '60s Aldo van Eyck presented Chombart's texts during his teaching activity in Delft, and recommended that his students read them. He also showed them pictures of his projects together with the African Dogon ones, and invited students to study Griaule's anthropology and Chombart's social geography. One of his students remembers: "*His photographs and those in Chombart de Lauwe's book Découverte aérienne du monde showed most suggestively how the settlements of these people nestle the landscape*" (Strauven, 1998).

Chombart's works and aerial pictures had a decisive influence on the member-architects of the Modern Movement (Avermaete, 2005). The 8th CIAM in Hoddesdon (1951), was an important sounding board for this influence as it was open to new issues. It was during this Congress that architecture's approach was amplified by conducting multidisciplinary studies in various fields: photography, history, geography, architectural design, city planning, morphological and social studies, thanks also to the aerial images presented. The new tendency of using the aerial view as a key to understanding the fabric of the city was confirmed in the Congress of Aix-en-Provence (1953), where aerial photography became a central tool for urban planning and architectural design in the French "Moroccan habitat: housing for the greatest number" grid by CIAM-Morocco (GAMMA) and in the "Bidonville Mahieddine" grid by CIAM-Algiers. The two grids, well known to historians, were accurate illustrations of the value of foreign experience in the renewal of the French and African debate. In particular, the "Moroccan habitat" grid was a detailed illustration of Ecochard's approach to architecture and urbanism, based on the idea of "*an absolute dependence between Habitat and Urban planning*" (Blain, 2003). This grid was built mainly around an ongoing project conducted by ATBAT-Afrique: the reconstruction of Casablanca's Carrières Centrales neighbourhood which intended replacing a shantytown slum. The project was described through numerous aerial pictures, like Chombart's analysis. It aimed at showing the complexity and diversity of existing cities and at understanding daily African life. As a result, the work of both grids illustrated a truly innovative and holistic approach, clearly taking a position against a reductive functionalism and considering the different levels of the urban question - from traditional village to city - as parts of a whole.

Aerial photography today: a cultural tool for the global world

In their drama, World War I and II greatly helped the development of airplane technology and subsequent aerial photography, while the birth of new social sciences allowed a large number of architects to discover aerial visuals, which then became a key tool for urban planning and architectural design in the moderns in a very few decades.

But what about aerial photography today? We are living in an era of great technological ferment: Geographic Information Systems, Spatial Data Infrastructures, and Satellite images are only some of the new tools. Scientific and technological research on photographic tools is constantly moving towards digital and the diffusion of satellite pictures, together with easy access to websites specialized in their visual reproduction, contribute to the creation of a new and widespread visual culture on a day to day basis. One example is Google Earth, which aims *“to organize the world’s information and make it universally accessible and useful”*: here you can travel to any location on the planet, explore images, look at landscape or building reliefs in 3D, and even travel back in time. The abstract ground of these new visual tools constantly offers and requires new accelerated modes of strategic representation, continually improving analysis, design and the process of education. Hybrid “mashup” of text, diagrams and photographic imagery are realized, transforming physical constructions on the ground into a sort of media surface, with a mass migration of the eyes of consumers into space (Dorrian & Pousin, 2013).



Fig. 3 Photographic view of Saudi Arabia photographed by the Apollo 17 astronauts in 1972. (Source: NASA)

In this panorama, it would seem that aerial photography has no more openings. Fortunately, however, this is not true. Even today, more than 150 years after the first pictures taken from Nadar's balloon, aerial photography shows the sympathetic planetary humanity, where people who are far away and unable-to-communicate are simply part of a undivided entity, included in a collective destiny (Fig. 3). In a rapidly continuous changing society, where the complex vision of humanity is reflected in architecture and the planet is a fully-accessible organism, the aerial view gives us back the dimension of landscape, filling the gap between nature's domestication and human destruction. The aerial view, and its history, allow us to remember that our technology is still unable to control geographical and urban complexity, and invites us not to give up our research on it.

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