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Nathalie Roseau and Marie Thébaud-Sorger

Milestones for a history of aerial culture

Historiography has frequently highlighted the break constituted by “air conquest”, considered from the standpoint of a history of mechanical flight that emerged along with the birth of aviation. Joseph Corn and later Robert Wohl both highlighted the manner in which the technology cut a pioneering imaginary swath through entire cultural realms – literature, popular culture and visual arts – long before it had become a means of mobility for the masses¹. However, subscribing to the modernist paradigm of a history of air conquest that begins at the turn of the last century masks long periods in the cultural construction of aerial practices that now count over two centuries of experience and achievements. From 1783 on, the first hot-air balloon flights were already paving the way for concrete individual and experimental investigations involving technical prowess and remarkable human adventures. Throughout the nineteenth century, these “non-dirigeable” machines nurtured new imaginaries, expanding the horizon of possible conquests in the process. “I feel sorry for he whose soul is not enraptured by this sublime poetry of natural spectacles”, exclaimed Gaston Tissandier as he celebrated the silence and steadiness of air balloon flight². And, although the sublime nature of these “aerial promenades” was different to what emerged later with motorisation insofar as they involved neither great height nor speed, they lacked nothing in terms of intoxication borne out of the instantaneous contemplation of an infinite space nor the sensations that arise out of immersing ones’ body in the atmosphere.

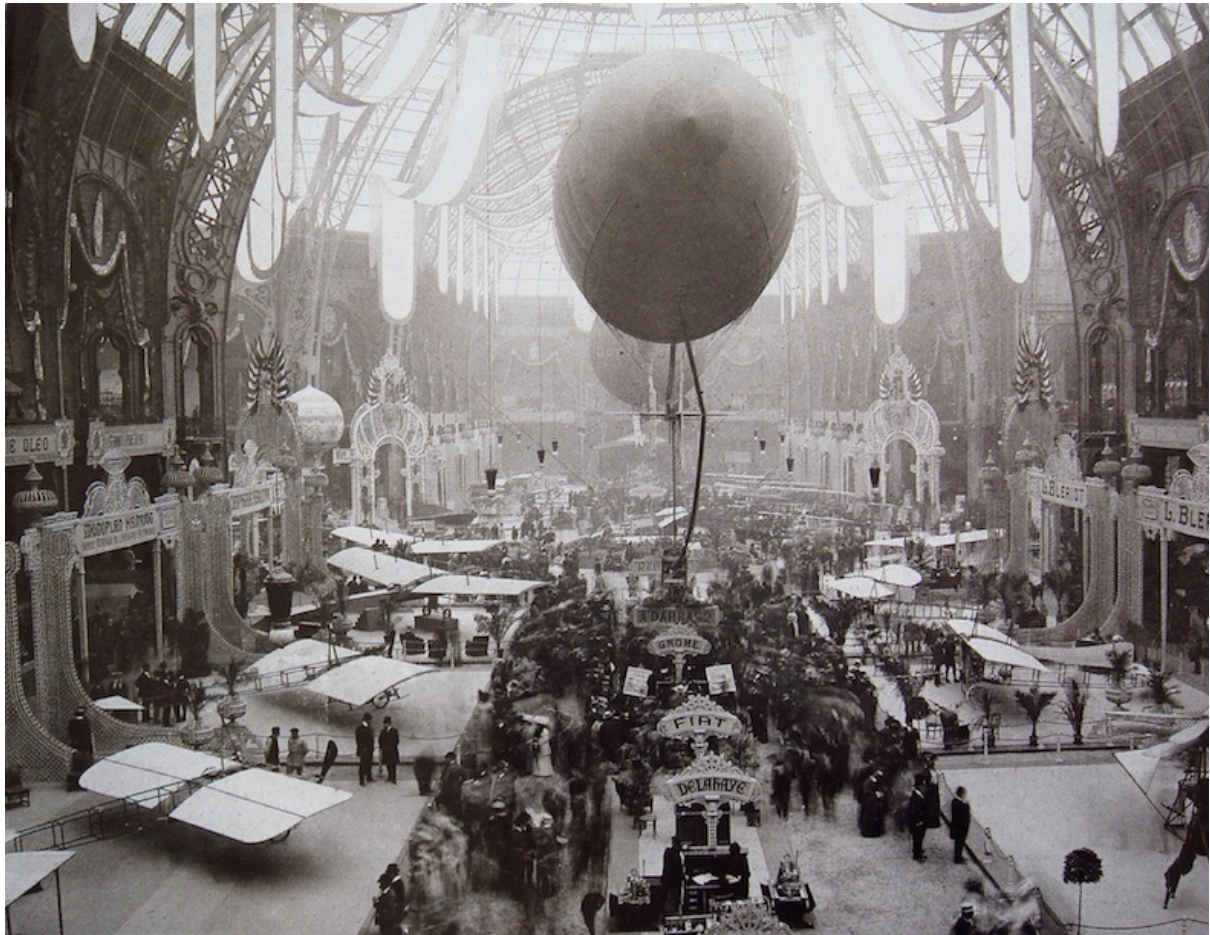
Expectations were therefore built around several decades of experiments and narratives and helped to gauge the progress achieved against the yardstick of these “lighter-than-air” machines. So, throughout the nineteenth century, history played a key role in this effervescence by placing new developments in a different context and recognising breaks with the past. When the first Paris Air Show was organised under the glass canopy of the Grand Palais in Autumn 1909, Louis Blériot’s airplane in which he had just crossed the English Channel featured alongside all manner of hot-air balloons and airships, notably reconstitutions of the air balloons used in Pilâtre de Rozier’s first free balloon flight and Jacques Charles’ hydrogen balloon of 1783³. For the nascent group of aeronautical industrialists and their public, this historical emphasis served to highlight the fact that all

¹ Joseph Corn, *The Winged Gospel: America's Romance with Aviation*, Baltimore: Johns Hopkins Univ. Press, rev. ed., 2002; Robert Wohl, *The spectacle of flight, Aviation and the western imagination, 1920-1950*, New Haven, Yale University Press, 2007.

² Gaston Tissandier, *Histoire de mes ascensions, Récit de quarante voyages aériens (1868-1886)*, 7^e éd., Paris, Maurice Dreyfus, 1887.

³ *L'Illustration*, no 3475, 2 Octobre 1909.

aerial matters were bound up with the long term even if this was only for measuring the extent of such transformations. But this co-existence of techniques and practices was not limited to the realm of aeronautics. The Paris Air Show was rooted in the transversal nature of motorisation-related knowledge and know-how that pointed up the close links between the automobile and aeronautics sectors: it brought the same sections of the public together at shows and helped channel the same mass enthusiasm from crowds who had come to witness the largely international competitions and sporting events of 1908-1909.



PREMIER SALON PARISIEN DE LA LOCOMOTION AÉRIENNE, QUI S'EST TENU AU GRAND PALAIS DU 25 SEPTEMBRE AU 17 OCTOBRE 1909. LA PHOTOGRAPHIE A ÉTÉ PRISE LE JOUR DE L'INAUGURATION.

It was a new milestone in “the invention of speed” whose genealogy has been analysed by Christophe Studény – from man’s first steps to untethered flight – and the conditions in which motorised flight was welcomed and developed helped nurture the flourishing culture of mobility⁴. As Christophe Asendorf put it, travelling in the atmosphere and the emergence of aerial speed embodied a “spatial revolution” and a new era steeped in its own modernity, narcissism, and hyperbole and celebrating dizzy heights and unsteadiness⁵. The presence of Constantin Brancusi, Marcel Duchamp and Fernand Léger at the Grand Palais Air Show was

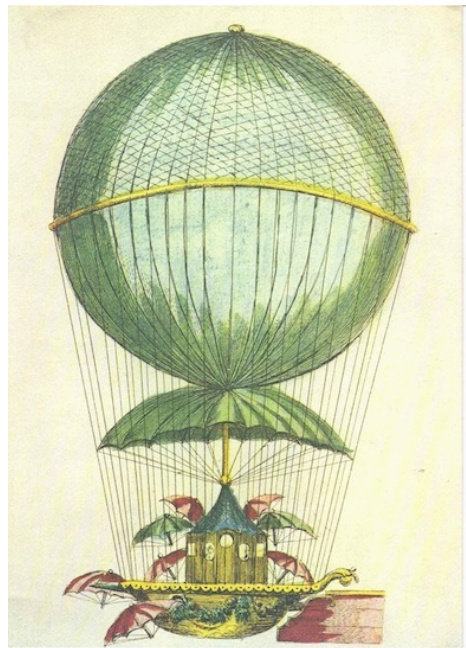
⁴ Christophe Studény, *L'invention de la vitesse, France, XVIII^e-XX^e siècle*, Paris, Gallimard, 1995 ; Depuis l'ouvrage fondateur de Wolfgang Schivelbusch publié en 1977 (*Histoire des voyages en train*, Le Promeneur, 1990), les historiens ont investi la mobilité comme objet de recherche à part entière ; Lire de Marc Desportes, *Paysages en mouvement, Transports et perception de l'espace, XVIII^e-XX^e siècles*, Paris, Gallimard, 2005 ; et de Mathieu Flonneau et Vincent Guigueno, *De l'histoire des transports à l'histoire de la mobilité ?*, Presses Universitaires de Rennes, 2009.

⁵ Christoph Asendorf, *Superconstellation. Flugzeug und Raumrevolution*, Springer, 1997.

significant: a new culture was being forged around the perception of space, technology and art⁶.

A history of aerial culture

Just a few decades later, aviation was transporting passengers across oceans in record times. Built on the flickering embers of the Jet Age and before the Low Cost era, Concorde was the political embodiment of European innovation and undoubtedly represented one of the most extreme and comprehensive forms of this eternally unsatisfied quest for technological prowess which, once achieved, turns into the ultimate disaster highlighting once again all of the poignant relevance of the myth of Icarus⁷. Aboard this amazing aircraft, passengers were treated to an exceptional level of service reflected *inter alia* in the gastronomic menus printed on facsimile copies of watercolour etchings taken from the Rothschild collection and depicting the first flights taken in an air balloon: Charles and Robert's flight in the Tuileries Gardens and Pilâtre de Rozier's lift off in 1783. Here again, acknowledgement of aerial navigation's amazing early machines appears to anchor the 1978 supersonic Atlantic crossing in a much longer-term genealogical perspective.



COUVERTURE DU MENU DU REPAS SERVI À BORD D'UN VOL TRANSATLANTIQUE DU CONCORDE, 1978, PROPOSANT DE DÉGUSTER LE SUMMUM DE LA GASTRONOMIE FRANÇAISE, ENTRE «MÉDAILLON DE LANGOUSTE À LA PARISIENNE», «CÈPES À LA BORDELAISE» ET «PARIS-BREST». FAC SIMILÉ DE LA COLLECTION EDMOND DE ROTHSCHILD.

These episodes call out for a more detailed examination of this blending of techniques and practices, and representations and experiences, working in tandem and forging what we have elected to term aerial culture: what straddles and links successive overlapping eras of mobility; the practices of navigators and pilots, curious onlookers and passengers; what perpetuates and converses with these heterogeneous machines - from air balloons to “the

⁶ Rappelé par Jyrki Siukonen dans son ouvrage *Uplifted Spirits, Earthbound Machines : Studies on Artists and the Dream of Flight 1900- 1935*, Suomalaisen Kirjallisuuden Seura, 2001.

⁷ Jacques Lacarrière, *L'envol d'Icare*, Seghers, 1993.

melancholy bird that will never sing”, in the words of Léo Ferré⁸; what depicts a new geography of continental and transcontinental exchanges; and what forges the narratives of great deeds, stories and epics as well as what disseminates, popularises and reinterprets these.

As such, the aim of this book is to tackle the history of aerial culture from a dual perspective, both in terms of the material and technical resources deployed to conduct a flight – i.e., forms of enterprise and organisation, prototypes and means of transport – and the representations and imaginaries that dictate the conditions in which it emerges. And while the possibility of innovation or use is undoubtedly enhanced by experimental, technical and industrial progress, it is also facilitated by the existence of a fertile imaginary that anticipates this. Similarly, technical system efficiency is enhanced depending on the context in which it is received and the take-up that underpins the possible development of new models, as Pierre Lemonnier has demonstrated by sketching out an ethnology of industrial objects⁹. The search for a prototype results from the interaction between social expectations, engineering know-how and specific forms of industrial organisation and cannot be reduced to the intrinsic efficiency of processes – i.e., undeniable qualities of flights, economic or safety-related superiority – nor to social or political agendas. To illustrate this argument we should bear in mind the impact of symbolic events on the effective development of aeronautical undertakings: the lasting impact on politics and popular opinion of air balloons used during the 1870 siege of Paris which gave a whole new lease of life to this form of air travel; or the collective shock experienced by Britain when Louis Blériot crossed the Channel that helped to forge a consensus around the development of a British aeronautics sector¹⁰.

The era of experimental flight therefore changed society’s take on its environment and allowed generations of inventors, engineers and entrepreneurs to dream, however it also helped to firmly anchor normally disparate dimensions of technical progress. Disparate types of risks, military threats and new transport possibilities: unprecedented issues of law, politics or administration among other things were raised in the course of aerial development. This intrinsic link between the perception of flight and the plethora of related issues and its development has unrelentingly forged the history of aeronautics right down to the present. The most disparate arguments related to the future of the planet, such as our contrasting representations of globalisation, coupled with our unrelenting drive to reduce distances and travel times, have had a major impact on the development of inventive collectives, support for opinions and the choice of economic and political investment. These constitute inextricably-linked dimensions.

In order to understand the lasting imprint that aerial flight has left on our modern world, we need to embrace all of these strands by placing our history in a long-term perspective and adopting a largely multi-disciplinary approach. Neither the technological evolution nor the concrete achievements involved in the switch from the experimental to the industrial and on to mass transport can disregard the multi-disciplinary issues that criss-cross and link these undoubtedly decisive moments in aeronautical history. Flight practices, geopolitical borders, mediatisation of narratives, and sensory and new spatial experiences are among the diachronic issues we have dealt with in this work in order to shift perspectives regarding the fundamental dimensions of aerial culture. They help to recontextualize events, inventions and

⁸ Léo Ferré, *Chanson mécanisée*, extrait de l’album *Paname*, 1960.

⁹ Pierre Lemonnier, « Et pourtant, ça vole ! L’ethnologie des techniques et les objets industriels », *Ethnologie française*, XXVI (1) : 17-31, 1996 ; Lire aussi du même auteur, "Y a-t-il un chamane dans le cockpit ? Sur quelques travaux d’histoire et de sociologie de l’aéronautique" *Techniques et culture*, n°42, *Du virtuel à l’âge du fer*. Juillet-Décembre 2003.

¹⁰ Tom Crouch, *Bleriot IX, the story of a classic aircraft*, Smithsonian Institution Press, 1982; David Edgerton, *England and the Aeroplane. An Essay on a Militant and Technological Nation*, London : MacMillan, 1991.

advances without denying the undeniable effects of breaks with the past. In doing so, they place aerial culture in a long-term perspective where it is sometimes overlain with know-how, representations, receptions and varied practices that straddle the realm of techniques, enterprises, organisations and their progress. Lastly, by linking hitherto separate approaches - from literature to urbanism, from art history to aesthetics, from the history of techniques to political history – they help tackle a series of issues that bring the history of aerial culture face to face with the most dynamic segments of contemporary historiography: cultural history, global history, urban history, visual history, micro-history or the history of mobility.

Temporalities revisited

Different historical turning points can be used as milestones along our timeline. First off, a long period that began in 1783 with the first hot-air balloon flights. As Jules Duhem reminds us, defying gravity had moved out of the realms of fiction towards reality¹¹. This kicked off a new, heterogeneous, experimental and frequently intense period marked by projects in various stages of completion, romantic narratives and depictions, and *active* fiction from Edgar Allan Poe to Jules Verne¹². In these books, knowledge was bound up with fairground attractions and hot-air balloons provided empirical knowledge of the sometimes perilous “aerial ocean”. Experiments and the imaginary helped nurture a thriving market of books, narratives and images, compiled and featured throughout the nineteenth century in numerous works such as Guillaume Louis Figuier’s collection *Les merveilles de la science* (translated into English as *The wonders of science or a popular description of modern inventions*)¹³. New sociabilities helped disseminate the interest in aerial navigation of actors from diverse backgrounds: civil engineers, chemists, entrepreneurs, journalists, etc. All were possessed of a belief in future progress and what has come down to us as a “pioneering spirit”. These explorers favoured the dissemination of reviews and the creation of aeronautical communities by organising conferences for example at which modern aviation would be invented. These gatherings played a key role in disseminating processes and nurturing an “inclusive” aeronautical domain that tracked trials, adaptations and progress in all techniques – both heavy and light – typified by the famous 1893 conference organised in Chicago by Octave Chanute where aeronautical developments in both Europe and the United States were discussed¹⁴. Air conquest helped create new spatial, hegemonic and political perceptions that reflected empire-building dynamics. The undertakings and experiences reported in the reviews, together with the proximity and accessibility of the shows and attractions (tethered balloons, sporting rallies), captivated the public’s attention and were regularly taken up and used by political decision-makers for both civil and military ends. The enhanced perspectives gradually mobilised the financial support and interest of backers and potential customers, particularly during the last thirty years of the nineteenth century which witnessed the reintegration of aerial techniques into the military arsenal.

¹¹ Jules Duhem, *Histoire des idées aéronautiques avant Montgolfier*, Paris, F. Sorlot, 1943 ; Jules Duhem, *Histoire des origines du vol à réaction*, préf. Gaston Bachelard, Paris, Nouvelles Éditions latines, 1959 ; Jules Duhem, *Histoire de l’arme aérienne avant le moteur*, Paris, Nouvelles Éditions latines, 1964.

¹² Par exemple Jules Verne, *Cinq semaines en ballon*, Paris, J. Hetzel et Cie, (coll. ‘la bibliothèque d’éducation et de récréation’), 1867.

¹³ Guillaume Louis Figuier, *Les Merveilles de la science*, 6 volumes, 1867-1869.

¹⁴ Voir les conférences sur la technologie de l’aviation lors de l’Exposition mondiale colombienne à Chicago (1893) éditées dans *Aeronautics, american engineer and railroad Journal*, vol 1, n°1, Octobre 1893, précédant d’un an l’ouvrage d’Oscar Chanute, *Progress in Flying Machines*, New York : American Engineer and Railroad Journal, 1894.



DÉCOLLAGE DU PLANEUR WRIGHT 1901, KILL DEVIL HILLS, CAROLINE DU NORD, JUILLET 1901. WILBUR WRIGHT PILOTE, DAN TATE ET EDWARD HUFFAKER AUX AILES, ORVILLE WRIGHT PHOTOGRAPHIE.

As we know, the First World War shook things up completely and favoured the emergence of a strongly transnational and competitive aeronautical industry for both air balloons and aircraft. The Pre-war open technology¹⁵ model gave way to patent-based forms of industry. At the same time, the world of small entrepreneurs – often daredevil pilots themselves – and workshops were changing in line with production methods. These fleets of aircraft gave birth to the possibility of developing the first regular airline companies together with other possible experiences for demobbed pilots and mechanics such as aerial photography for developing the land registry, racing or acrobatics. There were also major changes to machines driven partly by economic and partly by cultural considerations¹⁶: unexpected uses were found for aluminium and metal replaced wood and fabric. But despite this effervescence, aeronautics struggled to find a sustainable development model. Emmanuel Chadeau referred to this “needless invention”¹⁷ to highlight the difficulties encountered by the French aeronautical industry right up until its nationalisation and the drive by the Air Ministry under the auspices of Pierre Cot¹⁸ to bring together the different strands, while creating in 1933 and supporting the national carrier, Air France. Obviously, the history of aeronautical development took different paths in each European country that were intrinsically bound up with different political histories. As Joseph Corn¹⁹ demonstrated, aviation could bolster national unity and rally crowds in the United States around peaceful celebrations.

¹⁵ Robert C Allen, « Collective invention » *Journal of Economic Behaviour and Organization*, n°4 1983, 1-24; Dominique Foray et Liliane Hilaire-Pérez, “ The economics of open technology: collective organization and individual claims in the ‘fabrique lyonnaise’ during the old regime ”, dans Cristiano Antonelli, Dominique Foray, Bronwyn Hall, W. Edward Steinmueller, eds, *New Frontiers in the Economics of Innovation and New Technology. Essays in Honour of Paul A. David*, Cheltenham, Edward Elgar Pub, 2006, pp. 239-254 ; Liliane Hilaire-Pérez et Anne-Françoise Garçon, eds., *Les chemins de la nouveauté. Innover, inventer au regard de l'histoire*, Paris, CTHS, 2003.

¹⁶ Eric Schatzberg, *Wings of Wood, Wings of Metal, Culture and Technical Choice in American Airplane Materials, 1914-1945*, Princeton University Press, 1998 ; Eric Schatzberg, “Symbolic Culture and Technological Change: The Cultural History of Aluminum as an Industrial Material” *Enterprise & Society* - Volume 4, N°2, June 2003, pp. 226-271; Walter Vincenti, *What Engineers Know and How They Know It : Analytical Studies from Aeronautical History*, Baltimore (MD) : The John Hopkins University Press, 1990.

¹⁷ Emmanuel Chadeau, *Le rêve et la puissance, l'avion et son siècle*, Paris, Fayard, 1996, pp. 41-43 ; Emmanuel Chadeau, “État, industrie, nation : la formation des technologies aéronautiques en France (1900-1950)”, *Histoire, économie et société*, Année 1985, Volume 4, N°4-2, pp. 275-300

¹⁸ Centre d’Histoire de Sciences-Po-Archives d’histoire contemporaine, fonds Pierre Cot Période : 1929-1945 /Air France

¹⁹ Joseph Corn, *The Winged Gospel, op.cit.*



J.S. PUCK, «OPENING OF THE PANAMA CANAL: AT WHICH DISTANT DAY OCEAN NAVIGATION WILL BE A TRIFLE OUT OF DATE», 31 JANVIER 1906. L'ILLUSTRATION SUGGÈRE QUE L'ÈRE DE LA MOBILITÉ AÉRIENNE RENDRA OBSOLETE LE CANAL DE PANAMA.

The history of British aeronautics is closely linked to that of the Royal Air Force as well as to airlines developed to consolidate the British colonial empire. German aeronautics compensated for a prohibition on military development by forging an offensive, patriotic and unifying air culture for which the history of the Graf von Zeppelin rigid-hulled airship was a precursor. The Weimar Republic tapped into national pride by providing support for Hugo Eckner's projects²⁰ before these were taken over by the Nazi regime. It was these slow and luxurious airships that actually inaugurated intercontinental passenger transport and made the first around-the-world tour by air possible. Passengers could now fly over previously inaccessible spaces such as the Himalayas. These long haul flights prefigured the creation of travel for an elite and they were admired - rather than actually experienced - vicariously through news, literary narratives and air shows. Aerial movement and perspectives were disseminated in many different ways, innervating the whole of society and nurturing new

²⁰ Hugo Eckner, *Im Zeppelin über Länder and Meere*, Flensburg, Christian Wolff, 1949; Guillaume de Syon, *Zeppelin! Germany and the airship, 1900-1939*, John Hopkins University Press, 2002

pictorial representations that fed into a booming film industry ²¹. This period in which anything seemed possible was also littered with spectacular exploits, exploratory crossings and mastery over both air and speed that marked out aviators (both male and female) as other-worldly beings. They were depicted as a new type of man who was to exercise a fascination for totalitarian tendencies and aesthetics. He embodied a figure out of synch with society, and sometimes ill at ease within it, as depicted by Bertolt Brecht. “As humanity emerges from its slumber, we have built vehicles of steel, wood and glass as we go headlong into space with a motor more powerful than a hundred horses, but smaller than a single one”. Alongside this epic commentary on progress, the stranded aviator has to confront reality. He is thirsty and cries out for water: “He has exploded in space, he has fallen to earth and does not want to die and so cries out for help/why come to the aid of he who did not help us ?” responds the chorus, "and neither has bread got any cheaper"²².



LEFT: ZÜRICH, INTERNATIONALE FLUG- MEETING, ALPENRUNDFLUG, 3-10 SEPTEMBRE 1922. ILLUSTRATION REPRODUITE EN CARTE POSTALE: LE SPECTACLE EST DANS LA FOULE, ET PAS SEULEMENT EN L'AIR. RIGHT : NORTHWEST ORIENT AIRLINES, INTÉRIEUR D'UN DC-6B, DATE INCONNUE.



AFFICHES DE PROMOTION TWA, 1953, ET AIR FRANCE, GUY GEORGET, 1958.

And so on to the final phase: the transition to mass routine flight in the wake of the Second World War that was to kick off the formidable development of the aeronautical industry. The arrival of the jet aircraft followed by space conquest were among the last milestones along

²¹ Robert Wohl, *Aviation and the western imagination*, op.cit.

²² Bertolt Brecht, *L'importance d'être d'accord (Das Badener Lehrstücke von Einverständnis)* 1929, livret d'Opéra créé en juillet 1929, où il met en scène un aviateur accidenté, figure de l'Icare moderne, et un groupe de villageois (le chœur).

the path towards the democratisation of transport that was to sweep the entire planet in just a few short decades. Still elitist Post War flight had powerful imaginary potential: the glamour of the stars alighting on to the runway; the wider international relations highlighted by images of foreign leaders landing on the national territory; the modernity of the urban showcases constituted by brand new, shiny city airports that encapsulated the pride of the new world powers. The extensive media coverage of air practices, coupled with a broad range of representations, endurably marked out this period which was to pave the way for the increasingly rapid development of mass air travel. Flight paths and flows were the watchword and elitist, popular images of planes taking off were now just part of nostalgia. Airport viewing platforms gave way to security procedures; exotic trips to automation; VIPs to businessmen or tourists lost among the masses, or wending their way through them equipped with the magical Platinum card. It was the era of clearly-defined professions: air controllers on the ground and hostesses in the air.²³ It was also an era in which passengers were split between “aerophobia” and enthusiasm for flying, and between avid collectors of aerial memorabilia and superstars travelling around in their private jets. Then came the airport hubs, global infrastructures and sources of a more worrying than optimistic imaginary: cyborg territories²⁴, frontier and migration spaces, targets of global terrorism and critical lessons for contemporary urbanisation.



LEFT : ROISSY 1, HALL DÉPART, 1976. RIGHT : INAUGURATION DE ROISSY 2 PAR FRANÇOIS MITTERRAND (EN PRÉSENCE DE GASTON DEFFERRE ET L'ARCHITECTE PAUL ANDREU), 24 MARS 1982.

Imaginary, objects, practices

This timeline retraces inventions and constructions and updates the images, visions, approaches and projections that generally forged developments in aerial culture, prefiguring a parallel narrative that is resolutely bound up with the concrete and material history of aeronautics. The key assumption underpinning this work is that an object as complex as aerial culture can only be analysed in a heuristic manner by bringing arguments together and fleshing out existing research. As such, the following series of eleven representative case studies are intended to harness a cross-disciplinary analytical framework in order to highlight the plurality of the dimensions underpinning aerial culture: practices and professions, political challenges, narratives and related reflections, shifting perspectives, and mobilities that alter the perception of space.

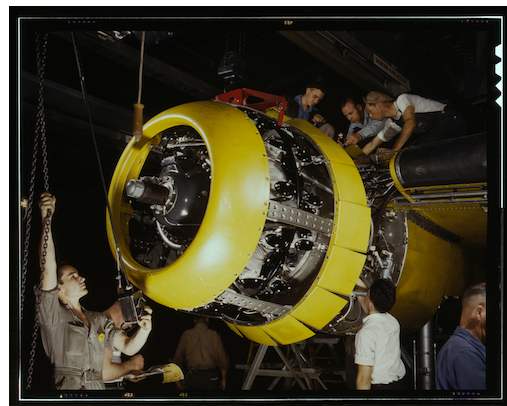
The imaginary - by which we mean the bedrock of representations, stratified and crystallised by the accumulation of visions, approaches and images - provides the unifying theme of this

²³ Drew Whitelegg, *Working the Skies: The Fast-Paced, Disorienting World of the Flight Attendant*, NYU Press, 2007.

²⁴ Antoine Picon, *La ville, territoire des cyborgs*, Besançon, Éditions de l'Imprimeur, 1998,

work precisely because it opens up this intermediate space that breaks down frontiers, creeps into the intervening space and brings about cooperation between disparate universes ²⁵, and links dreams to reality, feelings to the practical and the immaterial to the material. The imaginary lies at the heart of the invention, prototype or project, opens up the realm of possibilities and gets to grips with entrepreneurial practices, commercial arguments, experimental initiatives and patriotic / political arguments. And while concrete, experimental and pioneering flights are initially the preserve of entrepreneurs, inventors and specialised publics, writing up accounts of the attempts qualified as exploits constructs narrative frameworks and banks of images that may be appropriated in multiple ways and used to nurture reflections concerning possible uses for communities of practitioners, inventors and readers, thus forging opinions and stimulating creative approaches.

A number of key questions emerge from the essays included in this work that facilitate a comparative approach in terms of both viewpoints and disciplines: social cultural and economic history ; history of art, perspectives and cities ;socio-anthropology, literature and visual arts. A certain number of crucial objects and figures are dealt with such as machines, the pilot, the airport, the enterprise, popular enthusiasm, artistic productions, aerial views and travelling practices. Aside from the well-known chronological history of institutional, technological and political transformations already outlined, the eleven essays comprising this work will focus on the birth of the aeronautical industry, its role in military history and the opening up of aviation to mass travel. Cross references between the essays themselves will also point up relationships gradually built up over time that are relevant from a long-term perspective.



LEFT : GRANDE VISITE D'UN BOEING 747, AIR FRANCE, 1974. RIGHT : MONTAGE D'UN MOTEUR SUR UN FAIRFAX B-25 BOMBER, USINE DE NORTH AMERICAN AVIATION, INC., INGLEWOOD, CALIFORNIE

The major themes tackled are structured around five axes. The first deals with the trial of flight itself and the quest for transcendence - as well as the reverse image of a dramatic fall back to earth – that forges a new type of heroism. Claude D'Abzac discusses the heroic pilot figures that predominated in the first-half of the twentieth century, characterised by the emergence of a new model of masculinity. Caroline Moricot then tackles contemporary transformations in flying practices confronted with automation and analyses the place of this heroic legacy as well as the relationship of body to machine.

²⁵ Patrice Flichy et Antoine Picon, Eds, «Technique et Imaginaire», *Réseaux*, Hermès Science, Vol 19, no109, 2001.

Flyovers have several types of effect and shake up symbolic representations of territory and the related notion of frontier²⁶. The ensuing political reconfigurations result from an alchemy of transnationalism and nationalism that will be examined in the second axis. Rune Hovd shows how the creation of flight paths in Norway in the Inter-war period integrated specific geographical constraints and highlighted the singular situation of a nation seeking unity at the margins of Europe and at the gateway to the polar regions. David Burigana recounts how the epic European Airbus transnational adventure reflected the deep-seated geopolitical transformations undertaken in the second-half of the twentieth century.

The quest for transcendence is also bound up with the frontiers and effects of technological possibilities which numerous histories have focused on, somewhere between optimism and criticism of technical progress. The third axis examines the legacy of such narratives which are not exempt from apocalyptic visions. Using a favoured popularisation medium, i.e., the postcard, Guillaume de Syon examines the fascination exercised by the hot-air balloon adventure at the turn of the last century and highlights the importance - as well as the risks and joys - of material culture in mediating aerial invention. This is reflected in the contemporary fiction of Thomas Pynchon and Gilles Chameroy takes us through its maze of aerial metaphors, thus bringing us back to the issue of totalitarian omniscience and criticism of technology.

Aerial perception tackles the whole issue of perspective from a broader standpoint in terms of sensorial, visual and spatial flight experiences. As such, this work intends to explore the artistic representations through which the – conquering or exploratory - apprehension of “atmospheric air” as a concrete empirical space has modified this perception. As an inhabitable space as much as a space of mobility, the air is a *material* in itself that artists invite us to penetrate and to feel. For example, the sculptor Panamarenko reflects this tension between air and matter in the poetry of his flying machines²⁷. Andrea Urlberger has chosen the work of the Argentine artist Tomas Saraceno to present the links forged between the *use* of the air and artistic practices, an encounter that produces other possibilities for *inhabiting* the world.

Embracing the entire horizon, slipping along a newly limpid landscape, roaming freely through space and time, gaining a fresh, pared-down perspective of territory: aerial perception is both vision and representation. The fourth axis focuses on this dual function and its effects. The aerial view as survey instrument and inventory is tackled first through kinematics and the multi-form sensory experience described by Teresa Castro in flyovers of territories devastated in the wake of the First World War. It is then fleshed out with the use made of aerial photography for developing the Aquitaine coastline in France. Frédéric Pousin shows how the perception of “anthropisation” is deployed to analyse manmade impacts on the landscape.

When translated in terms of conquest and practice, the quest for habitability of the third dimension has gradually penetrated our representations of bodies, space and view and irrigated both technological and artistic creativity. It has forged close links with the transformations in our urban environment. The fifth and last axis focuses on the spatialities crystallized by aerial mobility and its infrastructures. Nathalie Roseau considers the airport as

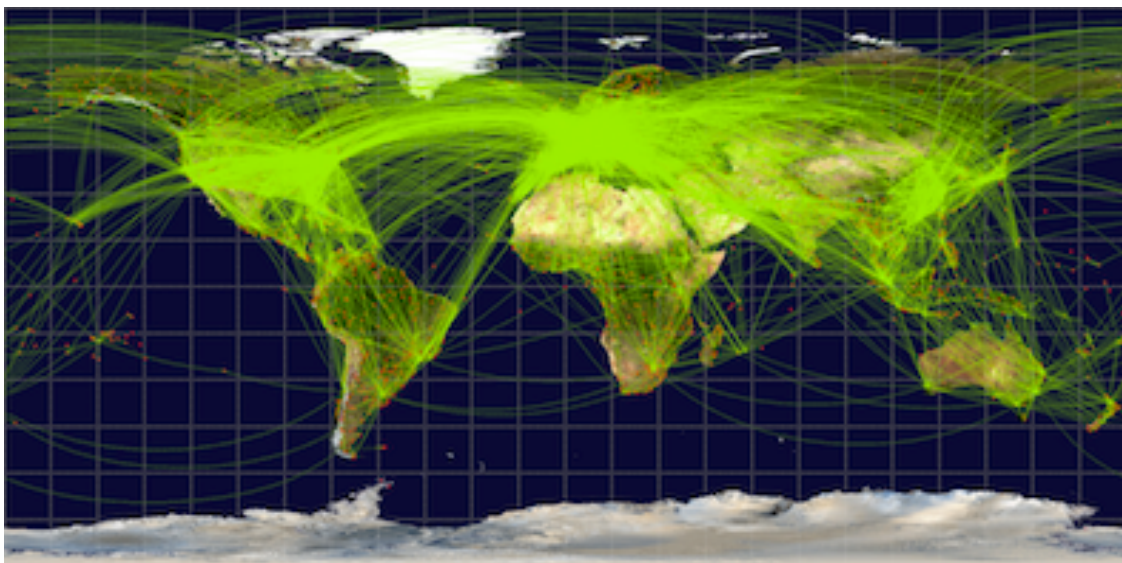
²⁶ Dieter Zastrow, *Entstehung und Ausbildung des Französischen Vokabulars der Luftfahrt mit Fahrzeugen “leichter als Luft” (Ballon, Luftschiiff), von Anfängen bis 1910*, Tübingen, Max Niemeyer, 1963.

²⁷ Michel Baudson, *Panamarenko*, Paris, Flammarion, 1996; *Panamarenko : La rétrospective !* Frederik Leen, Francisca Vandepitte, préface Michel Draguet, Bruxelles : Musées royaux des Beaux-Arts de Belgique : Ludion, DL 2005.

paradigm of the urban frontier. Just as aerial views assess and reshape the subject at hand, airports observe and reconfigure their host city and hold a mirror up to the future as the expression of the city's most acute aporias. Vanessa Schwartz explores the whole question of obsolescence as it emerged at the beginning of the Jet Age in the conception of modern airports and re-examines the place of monumentality and materiality in our built environment.

A modern culture

Flyovers provide an aerial vision of the world that unlocks fresh intelligibilities and becomes a tool for understanding and measuring, and even a powerful control and surveillance tool. These aerial techniques provided empirical knowledge of the atmosphere and stratosphere and helped drive a series of major cultural changes at the end of the modern era concerning the manner in which space was perceived and gradually acquired an “extra-terrestrial” dimension. Flight also offered more sensitive territorial journeys. From the plunge into the elements and the “savage theatre of nature” described by eighteenth century air travellers, to measuring the anthropisation of nature from a twentieth century aerial perspective, we have gradually moved towards an understanding of new markers concerning both the organisation of human territories and a geographical approach to “habitats” or even to the biosphere. As such, the emergence of this synthetic/total view linking empiric experience of flight to the possibility of a “global” perspective, has accompanied and consolidated the emergence of an aerial-based modernity.



WORLD AIRLINE ROUTE MAP 2009. CARTE DES 54317 ROUTES AÉRIENNES DU TRAFIC MONDIAL EN 2009. LA BASE SUR LAQUELLE A ÉTÉ ÉLABORÉE LA CARTE EST LA NASA BLUE MARBLE.



24 MAI 2012, SORTIE DE L'AVION SOLAR IMPULSE À PAYERNE EN SUISSE POUR SON PREMIER VOL INTERCONTINENTAL PAR ÉTAPES. AVANT DE REJOINDRE LE MAROC, SOLAR IMPULSE A EFFECTUÉ UNE ESCALE À MADRID EN ESPAGNE.

This modernity was also driven by another dynamic - the interplay between the two dimensions that are underpinned in a contradictory manner: firstly by the institutionalisation, massification and increasingly routine nature of a range of appropriation strategies in which flight became an integrated and mundane expression of travel together with its infrastructures and businesses or its hopes of economic revival hanging on airline fleet sales; and secondly the incessant renewal of a space for creation and innovation through experience and projects that make the “pioneering” characteristic a consubstantial form of aerial culture. This take on creativity, as expressed through the prototypes and experiments, aesthetic forms, innovative practices – and routine nature – of the automated mass transport systems closely bound up with the “global village” and synonymous with hypermodernity, is part and parcel of aerial culture. It remains as active as ever after two centuries of invention and seeks to avert the inevitable downside of technological optimism. From being synonymous with globalisation and power, aerial culture is moving towards a critical reformulation of growth and mobility²⁸ reactivated around new prototypes (rocket planes, solar impulse, barge balloons or public transport) that contribute to the diversity of aerial machines, just like the first aircraft and the old hot-air balloons exhibited side-by-side at the Grand Palais in 1909.

Lastly, flyovers tend to subvert the notion of frontier by their very nature, as attested by the globalisation of experiences, inventions, visions and corporations. Without decoupling industrial and urban production from their cultural dimension, the articles explore many different - and too infrequently compared - dimensions by pointing up a series of similarities and differences. It is in this respect that we may also refer to modern culture as different national contexts arise from perspectives that are bound up with local cultural practices and representations. From airport gastronomy to the corporate design of the European plane:

²⁸ Alain Gras, *Fragilité de la puissance, se libérer de l'emprise technologique*, Paris, Fayard, 2003 ; Alain Gras et Gérard Dubey, *L'avion: le rêve, la puissance et le doute*, Publications de la Sorbonne, 2009.

through practices and experiences, pioneering figures and enterprises, and using very different research objects, we are able to distinguish the differentiated and transnational contours that show how globalisation is far from synonymous with uniformisation. In the wish to also contribute to this perspective and in full awareness that the essays included in this volume emanate from a vision rooted in the industrialised Western countries that were the cradle of the early aeronautics industry, this book would like to offer both a European perspective on a domain that has been extensively covered by Anglo Saxon historiography, while also leveraging multi-disciplinary and thematic approaches in order to embrace the many other visions.



009-016 中国跳楼机事件, "Live at the high place II", 2008, 35.00, Beijing, China/Now

LI WEI, «LIVE AT THE HIGH PLACE, 6», 2008.



JEAN-MARIE MASSAUD, MANNED CLOUD 2009, EN PARTENARIAT AVEC L'ONERA.