

Introduction. Birth and Affirmation of the Airbus Group (1960s-1980s)

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Introduction. Birth and Affirmation of the Airbus Group (1960s-1980s)

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OUTLINE

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An international symposium: Birth and affirmation of the Airbus group (1960s-1980s)

Airbus, the origins...

Airbus, the realities of an industrial model...

Airbus, other co-operations...

TEXT

- 1 In 2020¹, the Airbus Economic Interest Grouping (EIG) celebrated its 50th anniversary. Founded on 18 December 1970, its purpose was to coordinate the implementation of a multilateral industrial cooperation programme ongoing since July 1967 and to facilitate the marketing of aircraft.

The origins of the Airbus project: European aeronautical cooperation outside the EU

- 2 From the 1960s onwards, the European countries with an aeronautics industry began to engage in military industrial cooperation (C160 Transall - France and the Federal Republic of Germany (FRG), Jaguar - France and Great Britain) and civil cooperation (Concorde - France and Great Britain, Mercure - France, Belgium, Spain, Italy).² For them, it is a question of pooling costs and knowledge, sharing experience, opening up new outlets, carrying out apprenticeships or sharing financial risks, etc.

- 3 In the second half of the 1960s, when commercial air traffic was expanding rapidly, discussions began on the launch of a large-capacity civil transport aircraft capable of entering a market clearly dominated by the United States. This perspective was based on the multiple know-how developed by the various countries of the European continent and the projects under development (Galion, HBN 100, etc.). In the last quarter of 1966, a technical group involving French, British and German manufacturers was formed to consider the development of an aircraft, the A300.
- 4 On 26 September 1967 in Bonn, West Germany, Great Britain and France signed a memorandum of understanding for the launch of a first phase of the project.³ The French company Sud-Aviation was entrusted with the management of the airframe because of its experience with Caravelle and Concorde, the British company Hawker-Siddeley contributed cockpits and wings thanks to the Comet and Trident, and the FRG, through the Deutsche Airbus consortium created a few weeks earlier,⁴ became involved with the aim of relaunching and rationalising its aeronautical industry. The set timeline foresees a re-evaluation of the project in April 1968, which should in principle lead to the realisation of a second phase in July 1968.
- 5 The industrialists' committee brought together representatives of these three partners. It met for the first time on 16 October 1967 and decided to create a company to market the equipment. Roger Béteille was appointed to manage the project. A consortium in the form of a *Société Anonyme* (SA) was created on 14 June 1968, Airbus International, whose capital was divided as follows: 37.5 per cent each for Sud-Aviation and Hawker-Siddeley, 25 per cent for Deutsche Airbus. In a study on cooperative agreements, the economist François Chesnais defines the consortium as a form of organisation in which:

[Joint] ventures with technical and commercial objectives that can be pursued jointly [...] aim to develop, produce and market a heavy product (e.g. a long-haul aircraft, a large jet engine, a military aircraft or a heavy weapon) with strong systemic characteristics that allow a division of labour between the consortium partners.⁵
- 6 Programmes developed in collaboration within the aerospace industry often meet this definition. In the case of Airbus, the coopera-

tion is said to be non-Community because it goes beyond the framework of the European Economic Community (EEC) and includes Great Britain and Spain, which are not yet members.⁶ But the first setback occurred in 1969. Faced with domestic difficulties, undermined by the financial cost of Concorde and still hoping to produce its BAC 3-11 (or BAC Three-Eleven) medium-haul aircraft, the British government withdrew from the project, but allowed Hawker-Siddeley to participate.⁷ While Concorde took to the skies for the first time on 2 March 1969, on 29 May a “Franco-German intergovernmental agreement” was signed for the Airbus at the 28th Paris Air Show. It provided a framework for the management of the programme and specified the responsibilities of the various partners. Another text organised the relations between the various companies involved.

- 7 The EIG Airbus was finally created on 18 December 1970.⁸ This consortium, with its headquarters in Paris, enabled legally independent companies (Aérospatiale,⁹ Deutsche Airbus¹⁰ and Construcciones Aeronáuticas Sociedad Anónima (CASA)¹¹ - 1972) to collaborate and network. It has a dual function, commercial and technical. Airbus Industrie is responsible for all phases of aircraft marketing (market studies, customer prospecting, negotiation and conclusion of sales contracts and after-sales service). At the industrial level, it coordinates and ensures the technical and industrial coherence of the programmes, i.e. an important part of the activity of the partner companies. For François Chesnais, the main parameters influencing the conclusion of cooperation agreements of the EIG type are characterised by:

- An important role of the State in the organisation of the industry, and of the market, of an activity considered as strategic;
- A highly concentrated international supply structure tending towards monopoly or duopoly;
- A high degree of novelty and sophistication of technologies;
- A strong accumulation of technical capital within large firms with privileged links with the State and large research laboratories;
- Very high investment thresholds with very long payback periods;
- A high degree of systemic decomposability of products, particularly due to their technological content¹².

- 8 In 1972, the capital of the EIG was divided 47.9 per cent each between France and Germany and 4.2 per cent between Spain. Deutsche Airbus, CASA and Aérospatiale¹³ embarked on the design and manufacture of a medium-haul transport aircraft, the Airbus A300, a twin-engine wide body aircraft.
- 9 The Consortium has a dual role, commercial and technical. Airbus Industrie is responsible for all phases of the marketing of the aircraft (market research, customer prospecting, negotiation and conclusion of sales contracts and after-sales service). The importance of the marketing activity can be seen in the distribution of the consortium's workforce. In June 1994, 60 per cent of Airbus Industrie's staff were assigned to activities directly related to commercial functions.¹⁴ At the industrial level, Airbus Industrie coordinates and ensures the technical and industrial coherence of the programmes, i.e. an important part of the activity of the partner companies.
- 10 The creation of an EIG appears to be a response to the commercial, political and industrial challenges that arise from this international collaboration in civil aeronautics. Airbus is the first international co-operation programme in which none of the industrial partners has dominant power. This is all the more important given the strategic role played by the aeronautics industry in public policy and the fact that this industry is characterised by the non-existence of multinational industrial firms.

Difficult early years: the emergence of a commercially credible aircraft

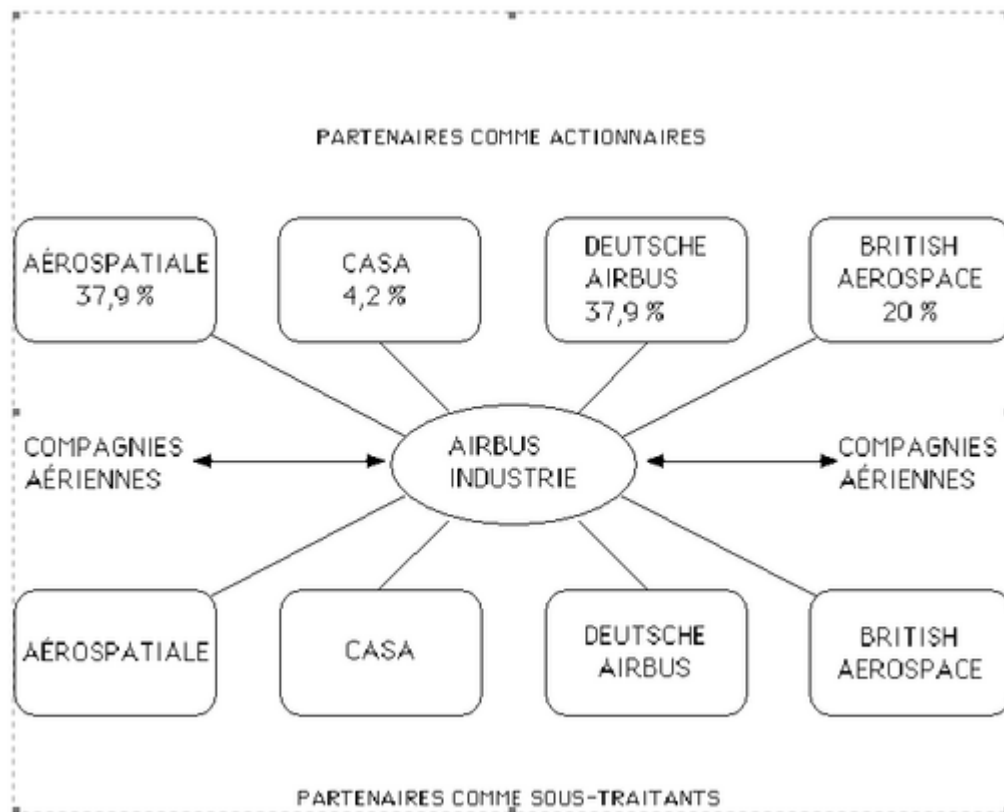
- 11 The A300B, a wide-body twin-engine aircraft, flew for the first time on 23 October 1972, before entering commercial service on 23 May 1974. By 18 November 1974, as the effects of the oil crisis began to be felt, the aircraft was selling poorly: only 19 firm aircraft and 22 options had been ordered. The commercial debut was complicated. The project was very complex and was soon confronted with the difficulty of entering the market in a sector where there were many barriers and where the United States had a determining influ-

ence. Their domination of commercial transport aviation is very clear, notably through the Boeing 727, Boeing 737, Boeing 767, DC9 or DC10. Boeing,¹⁵ McDonnell Douglas Corporation and Lockheed Corporation have hegemonic positions in all segments of the aviation market.¹⁶

12 Airbus therefore had to make a breakthrough in North America in order to gain credibility with its customers. Progressively during this period, aviation is becoming more and more commercially oriented.¹⁷ Within the framework of the Airbus project, an evolution of the modes of action and intervention of the States in the industrial, political and commercial dimensions is visible, between national strategy and symbol of the European construction, between industrial, technological, political or diplomatic stakes.¹⁸ With the development of the consortium, we moved from an “arsenal logic” in which the role of the State was preponderant in the definition of objectives, programmes and their realisation, to a model in which these responsibilities fell to the sector’s industrialists.

13 It was not until 6 April 1978, when Frank Borman’s US company Eastern Airlines ordered 23 aircraft (and 9 options, plus 25 options on the A310, which had not yet been officially launched) that the Airbus was able to break into the market. A few weeks later, in July 1978, the A310 was launched, a derivative of the A300 with a wider range, which marked the development of a range of aircraft and introduced a series of innovations (the concept of shared aircraft, two-person piloting, etc.). It flew for the first time on 3 April 1982. The end of the 1970s was also marked by the return of Great Britain to the consortium. On 1 January 1979, British Aerospace¹⁹ (BAe) officially joined Airbus to participate in the A310 (Fig. 1 and 2).

Fig. 1. Partners involved in Airbus Industrie in January 1979



(M. Kechidi, *L'organisation comme système d'action et de cognition : éléments théoriques et référence à l'activité aéronautique* (Thèse de doctorat en Sciences économiques, dir. François Morin, université Toulouse 1, 1995), 288 p.)

Fig. 2. Load sharing between partners (A300/310)

British Aerospace	Fabrication de la voilure
MBB	Fuselage (sauf partie avant) Empennage vertical Aménagement commercial
CASA	Empennage horizontal Portes de train Portes cabines (A300/310)
Aéro-spatiale	Fuselage avant (intégration des systèmes de pilotage et de navigation) Caisson central de voilure Supports des réacteurs Assemblage final
Fokker	Parties mobiles de voilures (A300/310)
Belairbus	Parties mobiles de voilures (A310/A320)

(Ibidem)

- 14 The history of Airbus Industrie is marked by two developments:
- The emergence and constitution, largely unexpected,²⁰ of a European-level player openly aiming for 30 per cent of the world market for civil aircraft with more than 100 seats.
 - The emergence, at least in the French case, of new forms of relations between the State and companies in the aeronautical sector.
- 15 To these two developments we should probably add the fact that Airbus is the first successful international cooperation programme in which none of the industrial partners exercises dominant power. This is important when one knows the strategic role that aeronautics plays in public policy and the fact that this industry is distinguished by the non-existence of multinational industrial firms.

- 16 March 2, 1984 marked the official launch of the A320, which introduced new innovations (electric controls, mini-sticks, etc.), flew for the first time on February 22, 1987 and entered commercial service on April 18, 1988. Other aircraft followed to enrich the Airbus range: A330 and A340 at the end of the 1980s, then A380 and A350 in the 1990s and 2000s. All in all, after a long period of stagnation and crisis that lasted until the 1980s, Airbus finally experienced an undeniable commercial success that placed it in direct competition with Boeing.²¹ At the end of the 1990s, the EIG Airbus gave way to a private multinational company, European Aeronautic Defence and Space (EADS), created on 11 July 2000 by the merger of Aérospatiale, Deutsche Airbus and CASA.
- 17 The Airbus programme is an important field of experimentation in the construction of an industrial Europe.²² An emblematic project resulting from strategic political choices, the Airbus trajectory questions the place of Europe in the high-tech industries and the strategies implemented by countries and manufacturers in the development of aeronautical programmes.

An international symposium: Birth and affirmation of the Airbus group (1960s-1980s)

- 18 From 23 to 25 September 2020, the international symposium “Birth and affirmation of the Airbus group (1960s-1980s)” was held at the Université Toulouse-Jean-Jaurès, bringing together researchers (historians, sociologists, economists, managers, etc.), witnesses and actors, to contribute to a better understanding of the plural stakes (economic, social, technical, cultural, etc.) linked to the development of the programme between the 1960s and the 1980s, in order to restore more precisely the mainsprings and the significant stages of its realization. In particular, it was a question of understanding how the actors of the project, although they were attached to different aeronautical, political, economic and social contexts, managed to come to an agreement to cooperate, to take up the challenge of American competition and to finally bring out projects that symbolised the success of an industrial Europe.

19 From an academic point of view,²³ although geographers,²⁴ sociologists, political scientists²⁵ and economists²⁶ have been focusing their attention on Airbus for several decades, historians have remained somewhat aloof from this movement, despite pioneering initiatives such as the international symposium “Airbus, a European industrial success”²⁷ organised by Emmanuel Chadeau and the *Institut d’histoire de l’industrie* on 23 June 1994.

20 Little by little, a complex industrial system was built, marking a national and territorial specialisation of the actors of European aeronautics,²⁸ while it was initially the task of the Toulouse site to ensure the assembly of aircraft parts coming from the different European aeronautical basins located in France, the FRG, Spain or Great Britain.²⁹ As Med Kechidi and Damien Talbot have pointed out:

In fact, from the 1960s onwards, aeronautics became an industry in which no single aircraft manufacturer produced the entire product: in 1972, programmes carried out in cooperation already represented 50 per cent of French aerospace activity, compared with only 15 per cent in 1962.³⁰

21 This complex industrial organisation has repercussions on the conduct of programmes. The territories, companies and employees³¹ must take into account the transformations of the production system at local, national and international levels, so that the projects carried out can develop under good conditions. The stakes are many for the numerous actors involved in this cooperation operation. Indeed, Airbus is part of a largely internationalised industrial fabric and is confronted with issues which, although they may appear to be external at first sight, are in fact central to the understanding of the logics at work in the global aeronautics industry.

22 The articles are grouped under three headings: Airbus, the origins...; Airbus, the realities of an industrial model...; and Airbus, other co-operations...

Airbus, the origins...

23 The articles in this section all deal, from different viewpoints, with the first steps of the European consortium.

- 24 In “The Airbus Project Consolidates the Choice of Toulouse as the French Capital of Civil Aeronautics”, Jean-Marc Olivier shows that from the very beginning of the establishment of aeronautical activity in Toulouse, there is a complex relationship between the role of the State and that of the local actors (politicians, entrepreneurs and workforce). It is this relationship that marks the development of activities in the Toulouse area. It allows us to better understand how the Toulouse region managed to conquer a place of choice in the industrial system that was being built by benefiting from changes in the balance of power and alliances, and gradually asserted itself as a major pole of the French, then European, and even world civil aeronautics industry.
- 25 Stephen Rookes, in “Perfidious Albion? Understanding Britain’s Withdrawal from the Airbus Project, 1969”, looks at British hesitations and reservations about the Airbus project. Without disputing the transatlantic preferences of Harold Wilson’s Labour government, the article argues that there were multiple contextual reasons that made it difficult to develop a decisive and firm position on the Airbus project.
- 26 In “Le deal Eastern Air Lines-Airbus : une vente charnière” (“The Eastern Air Lines - Airbus Deal: a Landmark Sale”), Gaëtan Sciacco looks back at the order for 23 aircraft by the airline, which marks the European aircraft manufacturer’s first breakthrough in the American market dominated by Boeing, McDonnell Douglas and Lockheed. According to the author, the loan of several A300Bs that preceded this order was a real gamble, demonstrating the innovative spirit of the Airbus EIG teams, not only in the technological field, but also in sales and marketing.
- 27 Guillaume de Syon’s “No Sir, It’s an American Aircraft: Selling the A300 to the US Public in the 1970s” also looks at Eastern’s order, but within the broader question of how to sell a technologically advanced European aircraft to American companies and an American public convinced by the “buy American” approach. The author explains, on the basis of recently declassified archives, how Airbus had to downplay the European origins of the aircraft in order to overcome the protectionist barriers of the American market.
- 28 What are the main characteristics of the complex system of relations between the different national, European and international actors

that have made possible the existence of a successful system of integrated transnational production? Bertrand Vayssière answers this question in “Airbus, un envol pour l’Europe?” (“Airbus, a Take-Off for Europe”). By highlighting the success of the Airbus operation, he questions the existence of an “EU method” that could explain its success.

- 29 In the same spirit, Laurent Warloutzet, in “Airbus, modèle ou exception pour les ambitions industrielles européennes, 1967-1984” (“Airbus, Model or Exception for European Industrial Ambitions, 1967-1984”) states that despite a difficult Franco-German dialogue, the launch of the A320 in 1984 was a technical and commercial success. However, this success is, according to him, an exception compared to other European aeronautical co-operations.
- 30 While these contributions help to better understand the origins of the Airbus project in some of its aspects, others shed light on the construction of an industrial model.

Airbus, the realities of an industrial model...

- 31 Are aircraft sales to national airlines political? Are there correlations between the density of political ties (governmental or otherwise) and aircraft sales? Tobias A. Jopp and Mark Spoerer answer these important questions in “How Much Does Airbus’s Rise Over 1974-1989 Owe to ‘Political Sales’? A Pledge For a Statistical Approach”. Their demonstration is based on a multivariate analysis of Airbus, Boeing, Lockheed and McDonnell Douglas aircraft deliveries to government and private airlines between 1969 and 1989.
- 32 Christian Kehrt, in “Computerpilots? Airbus Introduction of Fly-by-Wire Technology in Civil Aviation in the 1970s and 1980s”, questions the man-machine relationship in a cockpit and particularly the introduction of fly-by-wire technology in Airbus aircraft. For him, it was the advances in this field that gave the European manufacturer the power to impose a technological paradigm that is now proven.
- 33 The article by Françoise Larré and Med Kechidi, “De l’Aérospatiale à Airbus: une histoire récente de la sous-traitance” (“From Aerospatiale to Airbus: a Recent History of Subcontracting”) proposes to charac-

terise the forms and contents of the subcontracting policy deployed by Aerospatiale and then Airbus from the 1970s to the end of the 1980s. It shows how contractual relations evolved from simple commercial contracts to relations of delegation of part of the design and development activities and progressively to partnerships for the joint design of complete and complex modular assemblies.

- 34 What about gender relations in the Airbus company? Nathalie Lapeyre, in “Quand la stratégie industrielle d’Airbus rencontre la politique du genre” (“When Airbus’ Industrial Strategy Meets Gender Policy”), looks at the implementation of a policy of professional equality between women and men. She shows how and in what way this desire to increase the number of women in the workforce is anchored in a more global logic of reform, restructuring and reorganisation of work, carried out in connection with the historical reconfigurations of the industrial strategy that have taken place over the last twenty years.
- 35 While an industrial model is gradually being developed and organised, co-operation is taking place, both directly with industrialists or with players participating in the business ecosystem, particularly in the technical and cultural fields, and within the framework of other co-operations.

Airbus, other co-operations...

- 36 After a long process of restructuring and learning, the Spanish company Construcciones Aeronáuticas Sociedad Anónima (CASA) was able to become increasingly involved in international markets and to take part in the Airbus project. This process is presented by Clair Juillet in “Dynamiques et trajectoires de développement d’une entreprise aéronautique espagnole des années 1940 aux années 1980: le cas de Construcciones Aeronáuticas Sociedad Anónima” (“Dynamics and Development Trajectories of a Spanish Aeronautical Company from the 1940s to the 1980s: the Case of Construcciones Aeronáuticas Sociedad Anónima”). The key stages of this development trace back the conquest of a capacity for technical innovation, particularly in terms of aerostructures.

- 37 Fabienne Pérès' contribution "De Dewoitine à Airbus: Vers une reconnaissance du patrimoine historique de l'aéronautique toulousaine. L'apport d'Aerospacia" ("From Dewoitine to Airbus: Towards Recognition of Toulouse's Aeronautical Heritage. The Contribution of Aerospacia") takes stock of the heritage process and the challenges ahead, at a time when, with Aerospacia, the *Cité de l'espace* and the *Envol des Pionniers*, Toulouse is clearly promoting its specific scientific, aeronautical and space culture.
- 38 Finally, Jean-Marc Zuliani analyses, in "Le programme d'avion franco-italien ATR, succès et défis d'une coopération aéronautique binationale" ("The Franco-Italian ATR Aircraft Programme, Successes and Challenges of a Binational Aeronautical Co-Operation"), the *Avions de Transport Régional* (ATR) turboprop aircraft programme, which was launched in 1981 and is now the world leader in the construction of propeller-driven aircraft for regional transport. This programme, also built in the form of an EIG, made the Italian aeronautics industry a major industrial partner alongside France for the first time in the production of a civil transport aircraft. The author recounts this successful co-operation and examines the challenges faced by both partners.

NOTES

- 1 We thank Madeleine Solomons for the translation of this introduction.
- 2 See D. Burigana, P. Deloge (dir.), "[Dossier] L'Europe des coopérations aéronautiques", *Histoire, Économie & Société*, 4 (2010), 128 p.; C. Carlier, *L'aéronautique française (1945-1975)* (Paris: Histoire/Documents, Lavauzelle, 1983), 449-516 ; J.-P. Hébert, J. Hamiot (dir.), *Histoire de la coopération européenne dans l'armement* (Paris: CNRS Éditions, 2004), 240 p.
- 3 B. Gunston, *Airbus. The complete story* (Sparkford: J. H. Haynes & Co Ltd, 2009 [1988]), 288 p.; T. Raabe, *Hochfliegende Ambitionen. Die Bundesregierungen und das Airbus-Projekt (1969-1981)* (Frankfurt: Campus Verlag, 2020), 176 p.
- 4 On 5 September 1967, the Deutsche Airbus GmbH was formed as an alliance to defend German interests in the realisation of a joint programme and

brought together Messerschmitt, Siebel, ATG, Hamburger, Vereinigte Flug-technische Werke (VFW). They were later joined by Fokker.

5 F. Chesnais, “Les accords de coopération technique entre firmes indépendantes”, *STI Revue*, 4 (1988), OCDE, 121.

6 The first became a member in 1973, the second in 1986.

7 On the history of the British aviation industry, see K. Hayward, *The British Aircraft Industry* (Manchester: Manchester University Press, 1989), 224.

8 J.-M. Olivier, 1970. *Airbus, naissance d'un géant industriel* (Toulouse: Éditions Midi-Pyrénées, 2020), 50 p.

9 It was created on 1st January 1970 from the merger of Sud-Aviation, Nord-Aviation and Sereb. See C. Carlier, G. Sciacco, *La passion de la conquête : d'Aérospatiale à EADS (1970-2000)* (Paris: Éditions du Chêne, 2001), 303 p.

10 The Dutch company Fokker enters into a long-term partnership with the German Vereinigte Flugzeug Werke (VFW), which becomes a stakeholder in Deutsche Airbus in 1969. On 28 December 1970, Fokker joined the Airbus project partners.

11 J. M. Román Y Arroyo, *Los primeros 75 años (1923-1998)*, CASA, 2 tomes (Barcelona: SEPI, Lunweg Editores, 1999), 229 and 213 p.; B. Rogado (ed.), *Airbus y España. La historia contada por sus protagonistas* (Madrid: Fundación SEPI, 2004), 270 p.

12 F. Chesnais, “Accords de coopération inter-firmes, dynamique de l'économie mondiale et théorie de l'entreprise”, in M. Humbert (ed.), *Investissement international et dynamique de l'économie mondiale* (Paris: Economica, 1990), 474.

13 The English company Hawker Siddeley does not participate in the capital but is an important supplier, notably for the wings.

14 Airbus Industrie, *Présentation*, Octobre 1994.

15 E. E. Bauer, *Boeing: The First Century* (Washington: TABA Publishing, 2000), 386 p.

16 D. M. Pattillo, *Pushing the Envelope: The American Aircraft Industry* (Ann Arbor: University of Michigan Press, 1998), 462 p.

17 C. Gormand, *L'industrie aéronautique et spatiale. Logique économique, logique de marché* (Paris: L'Harmattan, 1993), 236 p.

- 18 P. Muller, *Airbus : l'ambition européenne : logique d'État, logique de marché* (Paris: L'Harmattan, Logiques sociales, Commissariat général du Plan, 1989), 255 p.
- 19 British Aerospace, a nationalised company, was formed in 1977 from the merger of British Aircraft Corporation, Hawker Siddeley and Scottish Aviation
- 20 E. Chadeau (ed.), *Airbus : un succès industriel européen : industrie française et coopération européenne (1965-1972)* (Actes du colloque, 23 juin 1994, Paris: Histoire industrielle, Rive Droite, 1995), 182 p.
- 21 S. Aris, *Close to the Sun. How Airbus challenged America's domination of the skies* (London: Aurum, 2002), 242 p.; J. Newhouse, *Boeing versus Airbus. The inside Story of the Greatest International Competition in Business* (New York: Alfred Knopf, 2007), 254 p.
- 22 D. Burigana, "L'Europe s'envolera-t-elle ? Le lancement de l'Airbus et le sabotage d'une coopération aéronautique 'communautaire' (1965-1978)", *Journal of European integration History*, 13/1 (2007), 91-109.
- 23 Actors and journalists in particular also focused their attention on Airbus. See for example J.-P. QUITTARD, *Airbus ou la volonté européenne* (Paris: Éditions France-Empire, 1979), 314 p.; J. Picq, *Les ailes de l'Europe : l'aventure de l'Airbus* (Paris: Fayard, 1990), 343 p.; P. Sparaco, *Airbus : La véritable histoire* (Toulouse: Privat, 2005), 371 p.; B. Ziegler, *Les cow-boys d'Airbus* (Toulouse: Privat, 2008), 175 p.
- 24 See for example G. Jalabert, J.-M. Zuliani, "Airbus ou l'Europe industrielle", *Cahiers d'histoire immédiate*, 27 (2005), 137-154; or P. Beckouche, *La nouvelle géographie de l'industrie aéronautique européenne* (Paris: Géographies en liberté, L'Harmattan, 1996), 222 p.
- 25 P. Muller, "La transformation des modes d'action de l'État à travers l'histoire du programme Airbus", *Politiques et management public*, 7/1 (1989), 247-272.
- 26 See V. Frigant, M. Kechidi, D. Talbot, *Les territoires de l'aéronautique* (Paris: Géographies en liberté, L'Harmattan, 2006), 250 p.; M. Kechidi, "Modularité, firme-pivot, innovations : un nouveau modèle d'organisation industrielle pour Airbus", *Revue française de gestion industrielle*, 27/2 (2008), 22-41.
- 27 E. Chadeau (ed.), *op. cit.*

- 28 J.-M. Zuliani, G. Jalabert, F. Leriche, *Les villes européennes de l'aéronautique : Système productif, Réseaux internationaux de villes et dynamiques urbaines* (Toulouse: CNRS, CIEU, UTM, 2002), 343 p.; J.-M. Zuliani, G. Jalabert, "L'industrie aéronautique européenne : organisation industrielle et fonctionnement en réseaux", *L'espace géographique*, 34/2 (2005), 117-144.
- 29 G. Jalabert, J.-M. Zuliani, *Toulouse : l'avion et la ville* (Toulouse: Privat, 2009), 349 p.
- 30 M. Kechidi, D. Talbot, "Chapitre 4. L'industrie aéronautique et spatiale : d'une logique d'arsenal à une logique commerciale", in G. Colletis, Y. Lung (eds.), *La France industrielle en question : analyses sectorielles* (Paris: La Documentation Française, 2006), 79.
- 31 C. Juilliet, *Bâtir les relations professionnelles sous l'égide de l'État. Conflits et consensus socio-économiques dans un établissement de constructions aéronautiques français (1943-1978)* (Toulouse: Thèse de doctorat en histoire, dir. J.-M. Olivier, UT2J, 12 novembre 2018), 1006 p.

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