

EUROPEANIZATION OF SPACE:
THE ARIANE PROJECT BETWEEN EUROPEANIZATION
AND INDEPENDENCE

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ABSTRACT

The 1970s were dotted by tension and infighting between Western Europe and the United States, particularly in the wake of the economic crises sealing the fate of three decades of almost uninterrupted growth. Lack of confidence in the American willingness and capacity to guide the world economy combined with the Vietnam War and the Watergate scandal undermined the US prominent role within the Atlantic alliance. One consequence was a bolder Europe willing to experiment new solutions to the problems of the era. It was against this backdrop that new seeds for ambitious European plans on the aerospace fields were planted.

This study shows how previous European attempts to create an independent access to space had been hampered by industrial, financial, and political policies of byzantine complexity, due to vast array of requests coming from the European member states. A first concrete step was made in 1973 during the 6th European Space Conference in Brussels by promoting new space programs, including the Ariane launcher and the creation of ESA. The involvement in such a conference of different social actors, such as government officials, scientists, and representatives of European industries, was conducive to the efforts to increase the member states' awareness of the financial, political, and social gains that would result from the Europeanization of space.

The focus of this analysis are the debates among these actors concerning Ariane as a pivotal topic for achieving Europeanization of space. First, this work intends to demonstrate why the debates on Ariane developed for the first time during the early 1970s. It argues that they were born out of the necessity for European countries to overcome serious difficulties in competing in a US dominated aerospace market without a pooling of resources. Second, it shows how technological alternatives and possibilities proposed by the network of scientists defined the boundaries of the policy choices available at the national and international levels. Finally, by looking at the official records, industrial agreements, and

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oral interviews, this analysis aims to understand whether and how cooperation in space and technology fostered the European integration process and the Europe that has yet to come.

Keywords: Europeanization, Ariane, Space, ESA, Technology, Science, Cold War, European Integration.

In October 2029, the JUICE (JUperiter ICy moons Explorer) spacecraft should enter Jupiter's orbit 7 years after its scheduled launch. JUICE is meant to explore and study the gaseous giant planet and the circumstellar habitable zone around it by flying past its three largest moons – Callisto, Europa, and Ganymede – and finally by entering Ganymede's orbit. Its launch is scheduled to take place from Kourou in French Guiana in June 2022 on board of the Ariane 6 launcher. Fifty years divide the JUICE mission-to-be and the first Ariane 1 launch from that very same site on Christmas Eve, 1979. That day defined almost a decade of space cooperation in Western Europe and paved the way to an era of political transformation and technological independence whose story began at the dawn of the 1960s.

This study shows how previous European attempts to create an independent access to space had been hampered by industrial, financial, and political policies of byzantine complexity already during the 1960s. These obstacles were due to vast array of requests coming from the European member states that were expected to be met by the two space organisations at the time, the European Launcher Development Organisation (ELDO) and the European Space Research Organisation (ESRO). This analysis focuses on the debates among politicians, scientists, and experts, concerning an independent launcher as a pivotal tool for achieving a first attempt of Europeanization of space. First, it aims to understand the rationale that led to the development of Ariane. It argues that they were born out of the necessity for European countries to overcome serious difficulties in competing in a US dominated communication satellites field without a pooling of resources. Second, it explores the steps towards its development in the early 1970s focusing on 1973 as pivotal year for the launcher and the Europeanization of space. Third, it delves into the American perception of Ariane and the European policies in space. Finally, in the conclusion it argues whether and how cooperation in space and technology fostered the European integration process and the Europe that has yet to come.

COMMUNICATION SATELLITES AS RATIONALE FOR AN INDEPENDENT LAUNCHER

In the late 1950s the major Western European countries, namely United Kingdom, France, Italy, and the Federal Republic of Germany, were already leading considerable efforts and achievements in the space field. However, they were led mostly separately or in cooperation with the US, and they were not even comparable to the US or USSR space programmes.¹ The main characteristic of the early era of European space exploration was the difficulty in reaching a satisfying level of results. Space did not only mean playing a role in the Cold War arena. It meant development and future access to unknown technology to be applied to both civilian and military fields, but also a possible success on economic and social policies, and a certain political influence on national and international level. In order to achieve such ambitious goals, companies and organizations mushroomed between the 1950s and 1960s. In instance, at the national level, the French Centre National d'Etudes Spatiales (CNES) was successfully created in December 1961. At the European level, ELDO and ESRO Conventions were respectively signed in March and June 1962 and entered into force two years later. ELDO and ESRO played an important role in the framework of the European cooperation in space. These two organisations were created to develop and foster cooperation between different European countries and their national space organizations.² However, the activities of ELDO and ESRO tended to limp along since the beginning of their establishment.

During the 1960s, the governments of the big Western European countries went through a period characterised by lack of confidence in their own capability to obtain a significant role in space. Financial and managerial problems presented constant complications to the European space cooperation framework, especially among ELDO and ESRO. The historians John Krige and Arturo Russo have traced four main issues that hampered progress towards a coherent European space policy before the 1970s.³ First, the lack of a homogenous institutional framework responsible for the activities and the coordination of member countries; second, the different interests and ambitions between the national space agencies and the joint effort of different European actors; third, the lack of a harmonized industrial policy able to close the technological gap between Europe and the United States

¹ KRIGE *et al.* 2000, vol. 1: 9-11.

² ESRO funding members were ten states: Belgium, France, West Germany, Italy, the Netherlands, Spain, Sweden, Switzerland, and United Kingdom. ELDO was established by Belgium, France, West Germany, Italy, the Netherlands, the United Kingdom, and Australia.

³ KRIGE and RUSSO 1994: 2.

to guarantee an industrial and geographical *juste retour* among the member states and to facilitate the establishment of industrial consortia;⁴ and finally, the disagreement on whether to produce an independent European launcher or whether to rely on the American programme. These obstacles have always been overcome by the conjuncture of different factors, which I call ‘ingredients’: a mix of different personalities, political and economic contexts, deadlines, and a pinch of anti-Americanism. I argue that the combination of these ingredients helped the Europeans to overcome the four problems described by Krige and Russo and to succeed in establishing European enterprises and projects – from the communication satellites programmes to Ariane – which led to a strong Europeanization of the space policy field.

Thus, to understand the reasons behind Ariane’s development, it is vital to look at the core sector that led to the debates on this project: the communication satellites sector.⁵ This field proved to be strategic as far as development of high technology was concerned, for both civil and military purposes, but also for the vast market which it could fill – such as television broadcast and telephone linkage. The latter would guarantee strong political and cultural powers and influence derivable using telecommunication satellites. Unsurprisingly, the United States and the Soviet Union were the leading countries in this sector already in the 1960s and the first half of the 1970s, and the European governments were struggling to catch up due to the previously mentioned problems of coordination between ERSO and ELDO, the different national programs already in progress, and the cheaper cooperation with their transatlantic ally.⁶ Hence, it is important to highlight why, despite these complications, many in Europe wished to launch their own satellites independently from the United States’ launchers services.

It is possible to trace different reasons for building an independent satellite. The first reason was the economic benefit coming from the participation in future international programs, such as the satellite operator organisation established during the 1960s (INTELSAT), and the contracts to be redistributed among the most qualified European industries.⁷ The second

⁴ The *juste retour* – fair return – is the formula according to which each Member State gets economic benefit out of the ESA projects, meaning that the percentage of country’s contracts had to be bounded to its own contribution in the projects.

⁵ For the history of the communication satellites programs see: KRIGE *et al.* 2000, vol. 1: chap. 9; MEURANT *et. al.* s.d.

⁶ KRIGE *et al.* 2000, vol. 1: chap. 9.

⁷ The International Telecommunications Satellite Organization (INTELSAT) was created in 1964 by 13 countries, including the Vatican City. In 1972 the participant countries were 83. Intelsat I was launched into synchronous orbit in 1965 and Intelast III broadcasted the first Moon landing in July 1969. For Intelsat see: KRIGE and RUSSO 1994: cap. 5; SNOW 1987; For the geographical redistribution of contracts see: KRIGE *et al.* 2000, vol. 1: 72-75.

reason was the political determination to challenge the American monopoly of a new technology whose future value, spill-over effect, and use were visible on an incredibly large scale.⁸ Finally, national prestige played an important role as well, particularly for the French.⁹ At the end of the 1960s, Western European governments' determination to develop their own communication satellites grew alongside American criticisms of the European ambition in space. Here, and on other occasions as we will see in this work, the transatlantic relations provided once again a rationale for the development of an independent launcher.

On October 27-29, 1964, Europe crystallized its communication satellites program development during the European Conference on Satellite Communications (CETS).¹⁰ During the CETS meetings, the Space Technology Committee (STC) – whose task was to define a program that would make the European industry qualified to sign the Intelast agreements – drew up a development plan that, “the committee believed, indicated the only path by which Europe could hope to be in a position to supply adequately developed equipment for use in the global system from 1970 onwards”.¹¹ This ambition behind the STC plan, along with the national will to develop alternative application satellites, such as navigation and meteorology assistance, led to the results achieved two years later during the European Space Conference (ESC) that took place in Paris on 13 December.¹² The fourteen participating (member states from ELDO, ESRO, and CETS) decided to meet at least once a year at ministerial level to draw up and finally ensure a coordinated European space policy. However, the ESC was not always successful. Indeed, during the second conference held in Rome the next year, in 1967, among several doubts being raised over the economic feasibility of a European communications satellite system, most of the participants felt considerable animosity against the Franco-German experimental satellite later called *Symphonie*.¹³ According to the ESC delegates, this project would have duplicated CETS' work and overpowered the smaller Europe-

⁸ KRIGE and RUSSO 1994: 57.

⁹ MOULIN 2006.

¹⁰ KRIGE *et al.* 2000, vol. 1: 266-267. The French ‘Conférence européenne pour les télécommunications par satellites’ (CETS) was established after the American proposal for the creation of Intelsat in order to deal with communications satellite and to design a common European policy for the negotiations with the US. No legal act institutionalised CETS, but it was extremely active from 1964 until its dismissal in 1970.

¹¹ ‘Europe’s Comsat Plans’, *Flight International*, 14 January 1965, 2914 (87): 57.

¹² The ESC was created to ensure a coordinated space policy between European member states, ELDO and ESRO.

¹³ France and Germany officially agreed to build *Symphonie* in 6 June 1967. See: REINKE *et al.* 2007: 11.

an industries.¹⁴ Disagreements over *Symphonie* were not resolved, but the delegates committed themselves to a balanced and coherent space program elaborated by the so-called Causse Committee appointed by the delegates themselves.¹⁵ The Committee report was released in January of the following year and it suggested, among other proposals, that “Europe should aim to launch an average two scientific satellites per year in the early seventies” and to achieve this goal “a single European organisation [should] be created for space research and development”.¹⁶ Moreover, it was stressed the importance that the exploratory studies should have because they would “enable Europe to define particular areas where European industry would be really competitive with the US industry”.¹⁷ What emerged from these conferences and studies was a growing consensus that for Europe it was imperative to have a coordinated space policy, and an independent satellite program operational already in 1970.

This idea was widely shared by the Western European governments, but also scientists. For instance, Geoffrey Keith Charles Pardoe, PhD in Astronautics and at the time director of the non-profit organisation and consortium of the European industries, Eurospace, insisted that communication satellites should become the linchpin around which the European space activity should revolve.¹⁸ In this way, the European governments would be able to “meet the ever-growing demands for improved services”, such as and “also provide technological, educational and cultural advancement plus a return on the investment made”. Pardoe argued that a satellite system “could make a significant contribution towards satisfying European regional requirements for telecommunications and television” and that “Eurospace sees this as just an initial phase and regards it of the utmost importance”.¹⁹ It was indeed *the* initial phase of a space policy that still forms the basis of the nowadays European space policy.

We have seen that the idea shared by experts and governments was that Europe needed to ‘go it alone’. However, to launch a satellite in orbit

¹⁴ KRIGE *et al.* 2000, vol. 1: 117.

¹⁵ The so-called Causse Committee was established to elaborate the European space programme. Jean Pierre Causse was appointed Chairman of the Advisory Committee on Programmes at the Rome conference and was the head of the French CNES at Brétigny.

¹⁶ KRIGE and RUSSO 1994: 64.

¹⁷ ‘Europe’s Comsat Plans’, *FLIGHT International*, 14 January 1965, 2914 (87): 239.

¹⁸ ‘Eurospace view on communications satellites’, *FLIGHT International*, 10 August 1967, 3048 (92): 57. Eurospace was established in September 1961 as a supranational body whose aim was to promote and develop aerospace activities in Western Europe. It included the most important companies in the missile and aircraft manufacture sector.

¹⁹ ‘Eurospace view on communication satellites’, *FLIGHT International*, 10 August 1967, 3048 (92): 239.

the national space agencies needed a launcher, especially France, since the beginning of the space programme:

La France a jugé indispensable de mener un effort dans le domaine des lanceurs, parallèlement à celui consenti dans le domaine des satellites. Compte tenu de l'enjeu économique déjà prévisible des satellites d'application, il apparaissait en effet peu réaliste de chercher à développer des satellites sans disposer des moyens nécessaires pour les placer en orbite.²⁰

In fact, placing a satellite into orbit without a launcher and without interfering with the American interests was extremely difficult, as Paris and Bonn experienced with *Symphonie*. In 1969, the French and German increased their resolve to develop an independent launcher, especially since they were sure the US would not launch their *Symphonie*.²¹ Although, at the end of 1968 NASA declared that the US would be willing to provide the rocket to launch the Franco-German satellite if they “could arrive at a mutual understanding of the experimental character of the project”. What NASA meant was that the satellites had to be “used exclusively for experimental and demonstration purposes, not for the transmission of regular commercial or governmental traffic or broadcasts”.²² However, as we have seen earlier, Europe wanted to obtain political and cultural influence through her satellites and, as a consequence, a launcher. This stance was more than enough to give France and Germany the motivation to free themselves from the Americans and to strengthen their bargaining position towards the US and USSR in future negotiations with an independent European launcher.

During the 1960s ELDO had already developed a rocket, Europa I. This experimental launcher was not developed – or qualified, for that matter – to put a telecommunications satellite into geostationary orbit, and both ELDO and ESRO did not have the means to operate application satellites. In fact, with six European members in ESRO, and Australia, and ten in ELDO, these two organisations needed a much wider amount of resources and a more coherent shared interest in communications satellites. The Western European governments had only two choices: either an *ad hoc* upgrade of their existing launcher or to rely on the US launcher supply. This fundamental choice between either the transatlantic option or deepening

²⁰ Archives Nationales (hereafter AN), 19860235/37, pt. 2, JML-VB/24-430, Ministère du Développement Industriel et Scientifique, Programme Spatial Français, Bilan de l'expérience acquise en matière de lanceurs, 19 avril 1970.

²¹ KRIGE *et al.* 2000, vol. 1: 368.

²² Quote in: KRIGE and RUSSO 1994: 82.

European space cooperation sparked a heated debate between major European countries, which threatened more than a decade of European space cooperation.

FIRST STEPS TOWARDS ARIANE IN THE EARLY 1970S

It was now clear that to launch a satellite Europe needed a rocket. Despite the past experiences, the launcher's development was not spared the problems that characterized the communications satellite program. Moreover, the international atmosphere was not helping being the *détente* a period of political change and economic turmoil. In fact, the political and economic context in Western Europe and the United States played a crucial role in the debates on the development of the launcher and the European space policy – especially in the peculiar cases of Italy and the United Kingdom.²³ At the beginning of the 1970s, Western European countries were concerned when Nixon decided to suspend the convertibility of the dollar into gold in August 1971. With the end the Bretton Woods system and the experiments with the currency “snake” starting in 1972, followed by the first oil crisis and the Watergate scandal in 1973, Western European governments felt that they could no longer firmly rely on their transatlantic ally.²⁴ Political crises and economic stagnation nonetheless, *détente* led to impressive improvements in the relations between Western European countries, especially France and Germany, and between West and East Germany.²⁵ This widespread improvement of mutual relations – in a decade generally seen as of one of looming crisis – probably helped France and Germany to overcome their differences in reaching a satisfying agreement on the European space policy and thereby fostering the European integration process. However, more than two countries were needed to reach such ambitious goal.

At the ministerial meeting held in November 1970, French, German, and Belgian delegates showed their frustration for the other European delegates' reluctance to develop a European launcher by warning the other members that the three of them would build it anyway. In the meantime, the American government proposed the European ones to cooperate in the post-Apollo programme. What the US offer really demanded to achieve cooperation was a definitive reorientation in Europe's space priorities. The post-Apollo offer intentionally “placed a huge question mark over the con-

²³ TARANTELLI and WILLKE 1981; GIANNETTI 1998.

²⁴ ANDREWS 2008; JAMES 1996; VENN 2016; SCHULZ and SCHWARTZ 2010; EICHENGREEN 2010.

²⁵ KROTZ 2015; REINKE, SMERIN and WILSON 2007; HAFTENDORN *et al.* 2006.

tinued technological interest and commercial viability of a European conventional launcher into which so much effort and money had already been put".²⁶ The European delegates were yet divided between a fully European effort and an American cooperation. To make this uncertainty even worse, on November 5, 1971 ELDO's Europa II rocket exploded soon after being launched.²⁷ Europa II was designed to launch into orbit the Franco-German telecommunications satellite *Symphonie* following the French and German fears that the US would not be willing to launch commercially competitive satellites. This umpteenth failure worked as a catalyst for the European governments to reconsider the entirety of the efforts made during the past decade and pushed them to take a definitive stance on space policy.

Hence, the national delegations at both the European Space Conference (ESC) and the Assembly of the Western European Union (WEU) had lively discussions about defence, independence, and cooperation that sought to achieve the standardization of the aerospace industries among EEC Members States. They were aiming for a long-term penetration into the global aerospace market, at the time dominated by the United States and the Soviet Union. Part of the solutions sought by the European delegates envisaged a harmonized industrial policy coupled with a subsequent and urgent renewal of national industries. Among the several efforts undertaken at the time, it is possible to trace two pivotal moments for the architecture of the future European space policy: The First and the Second Package Deals. In 1971, the members of ESRO devoted themselves in what was later called the First Package Deal. Here, the European members agreed to participate in the development of three applications satellites programmes (in aeronautical navigation, meteorology, and telecommunication), and the actualisation of a comprehensive space program.²⁸ The deal was finally adopted by the Council of ESRO on 20 December 1971.²⁹ In order to deepen the cooperated agreed upon in the First Package Deal a second one was needed. The Second Package Deal was signed one year later and was born out of the necessity to reform ESRO and

²⁶ KRIGE *et al.* 2000, vol. 2: 391.

²⁷ Europa II was a rocket based on Europa I: its first stage was made of the British Blue Streak, the second stage of the French Coralie, and the third stage of the German Astris. It was upgraded – on French insistence – with a Perigee-Apogee System (PAS) that provided Europa II with a geostationary capability by adding a fourth stage that was the previous solid-fuelled third stage of the French rocket Diamant B.

²⁸ KRIGE *et al.* 2000, vol. 1: chap. 8.

²⁹ Historical Archives of the European Union (hereafter HAEU), ESRO/C/MIN/44, Minutes, Council 44th Session, 6 January 1972. The final version of the Resolution (ESRO/C/XLIII/Res. 3) is attached to the document.

ELDO inadequacy, and to create a single agency that could guide the European industrial policy while incorporating both ELDO's and ESRO's functions.³⁰ It was the result of the Ministerial meeting of the ESC that took place in Brussels on December 20, 1972 during which the European countries agreed on the creation of a new forum where national delegations could discuss and coordinate the space program and its launcher at national and international level.

At the end of 1972 ELDO ended to function. Along with it, the Europa programme was discontinued in April 1973 and Europa III was cancelled in September. Scientists and engineers involved in these space projects had been left flustered and embittered by ELDO's failure. Frédéric d'Allest, Ariane project manager from 1973 to 1976 and Director General at CNES from 1982 to 1989, describes that moment as fairly traumatic, representing a "heavy investment that had borne no fruit".³¹ According to d'Allest, several people working at CNES and ELDO did not want to give up on the production of a European launcher since many steps had already been made in that direction.³² Furthermore, the French government itself was not ready to give up on the launcher either. In fact, Paris' main goal, as reported by Raymond Oyre, head of the Ariane Programme in 1973, was to maintain the strategic goal of independent access to space by further developing technologies and know-how that already existed in Western Europe.³³ In order to ensure the success of these goals, the French Minister of Industrial and Scientific Development from 1972 to 1974, Jean Charbonnel, started a diplomatic crusade to fight the hesitance shown by some countries with regards to the development of the launcher program. A hesitance that, as seen earlier, troubled France, Germany, and Belgium. Initial but important results of his campaign to secure the development of the launcher had already been reached at the Ministerial meeting in 1972.³⁴ The Ministers responsible for the national space policy agreed that France, and none of the other countries, would take responsibility for the development of a third generation launcher (LIIS), and West Germany for the sortie module, everything in the framework of a brand-new and single European space organisation. This new organization would absorb

³⁰ RUSSO 1995.

³¹ HAEU, ESA, Oral History of Europe in Space (hereafter OHES), INT053, Frédéric d'Allest interviewed by David Redon on 19 November 2002: 3.

³² KRIGE *et al.* 2000, vol. 1: chap. 9.

³³ CHADEAU 1995: 15-34. HAEU, ESA, OHES, INT051, Raymond Oyre interviewed by David Redon on 19 November 2002: 7.

³⁴ CHADEAU 1995: 113-15. KRIGE *et al.* 2000, vol. 1: 368-371; DURAND-DE JONGH 1998: 149-190.

and replace ELDO and ESRO.³⁵ In order to do so, the French minister declared that France was ready to bear most of the burden, costs, and risks of such a significant project. In fact, Paris had most of the means and the resources to achieve that goal, and it was also more sceptical of the Americans and willing to reach its independent access to space. Since the CNES engineers had already started to develop the LIIS, Charbonnel's diplomatic and political campaign assured the CNES that its project based on Europa III would continue.

Finally, a suitable institutional framework emerged at the end of 1972, a framework in which the Members States were willing to cooperate and compromise for the development of the European launcher. Despite all the efforts, the French crusade to obtain the results they had hoped for was not over yet, and the other countries had started to change their stances. In fact, the Western European countries were dealing with apparently unsurmountable differences that clearly illustrated the deplorable state of European space activities.³⁶ France and West Germany, which had led from the beginning the initiatives in favour of the launcher in order to build its *sortie* module, were now embroiled in controversies, and Bonn was changing its view on the launcher. In fact, during the WEU Assembly in December 1972, the French delegates "insisted on priority for the construction of a European launcher, whereas the German ones gave first priority to participation in the post-Apollo programme, whatever the conditions for European collaboration".³⁷ The German delegation was keen to illustrate how much the European launcher rocket was uneconomic, and it was backed by the Belgian delegation's assumption "that participating in the post-Apollo programme is more important than building a European rocket".³⁸ On the other hand, Théo Lefèvre, Belgian Secretary of State for Scientific Policy and Planning from 1972 to 1973, was extremely concerned because he believed that the debates were continuing "without all the participants being really aware of the political consequences" of an independent European launcher.³⁹ This general discord was constantly nourished by the fresh memory of the various unsuccessful attempts made by ELDO to place a satellite in orbit. Yet, the debates around an independent space

³⁵ KRIGE *et al.* 2000, vol. 2: 15.

³⁶ HAEU, Western European Union (hereafter WEU) 73, Proceedings, XVIII Ordinary Session, Part 2, "The State of the European Space Policy", 4 December 1972, doc. 595: 246.

³⁷ *Ibid.*

³⁸ Klaus Richter (SPD) and Hektor de Bruyne (Volsunie) in HAUE, WEU 77, XVIII Ordinary Session, Part 2, December 1972: 206.

³⁹ HAUE, WEU 77, XVIII Ordinary Session, Part 2, December 1972: 191.

launch vehicle (SLV) capability for Europe persisted.⁴⁰ Acknowledging the importance of the satellite launch service, the Europeans slowly committed themselves to bridge their different viewpoints and difficulties in order to compete in that sector. One question remained unsolved: the shifted opinion of the German delegation.

At the end of 1970, Hans Leussink, the West German Minister for Education and Research from 1969 to 1972, had declared that West Germany was prepared to 'go it alone' and build a rocket in a trilateral cooperation with Belgium and France. Leussink and his Belgian and French counterparts agreed that the launcher should not be sacrificed, not even to participate in the post-Apollo Programme. However, to strengthen its position at the negotiation table with the US, Germany had started to detach itself from French efforts: Bonn had assumed a more prudent attitude because it had lost confidence in its own agencies and industries to follow a stand-alone strategy. In fact, according to a note released by the Quai d'Orsay, for the Germans "the prime objective was the development of an industrial capability in their industry which was adequate to maintain them in the first league, and which would later enable them to collaborate meaningfully in American ventures (Intelsat, post-Apollo)". France was interested in such programmes as well, but its main aim "was to ensure her autonomy in the area of telecommunications satellites, with a view to using these for radiodiffusion and direct television" and the availability of independent launchers "is essential if one attaches a political interest to space activities and requires that Europe retain her freedom of expression in this sector".⁴¹ In 1972, Paris and Bonn had clearly diverging priorities and eventually a divorce became inevitable.

TURNING POINT: 1973

"[E]verything really began in 1973".⁴² These were the words of d'Allest, and while we have seen how the story of Ariane goes back to the 1960s, it is difficult to ignore the importance of 1973 as a crucial year for Ari-

⁴⁰ Central Intelligence Agency (hereafter CIA), Report, *The Ariane Space Launch Vehicle: Europe's Answer to the US Space Shuttle*, July 1, 1983: 1. For the Franco-German different positions on launcher policy see: KRIGE *et al.* 2000, vol. 2: 397. ELDO was established in 1964 in order to develop a satellite launcher based on the British Blue Streak missile.

⁴¹ The Note dated 11 June 1971 is reproduced in: CHADEAU 1995.

⁴² HAEU, ESA, OHES, INT053, p. 4. Before Ariane, d'Allest worked on the Diamant B project at CNES since 1966 and from 1970 to 1972 he was project manager of the second stage of Europa 3 at ELDO.

ane, in conjuncture with other international events – from the infamous oil crisis to Kissinger’s speech ‘Year of Europe’. On the morning of July 12, 1973, Charles Hanin, the Belgian Minister for Scientific Policy and Planning who succeeded Levèvre, chaired the new ESC held at Palais d’Egmont, in Brussels.⁴³ Hanin had the difficult task of managing European ministers, ambassadors, and technicians holding different posts and varying in their ambitions. The positions of the various delegations were at odds as to the formalization of the agreements discussed in the December 1972 (the development of LIIS and the merger of ELDO and ESRO). For example, the Belgian delegation thought that it was too early to develop LIIS; the Swedish that it was not the right moment; the Spanish agreed to participate, but with a symbolic share; the Swiss had financial problems; and finally, the Italians were constantly uncertain and non-committal because of government instability at home.⁴⁴ The stances of the leading countries were even more divided. For instance, the German precondition for agreeing with the conference objectives was the participation to the American reusable space station programme, Spacelab, but they still preferred the post-Apollo programme to the launcher; while the British – who had always been reluctant to build a European launcher – continued to oppose the launcher’s development.⁴⁵ France’s position in this context is surprisingly different from what publicly advocated by her delegates.

Given the gargantuan efforts led by Paris in persuading the other countries on a comprehensive space program, it is natural to assume her positive attitude towards the points discussed at the ESC: the launcher and a single space agency. According to Perry Goodman, a British official based in Paris, in March 1973 the French had already visited seven of the capitals involved in the space policy and all of them had expressed an interest in participating in the launcher. “The interest was political and/or industrial. The Italians had been the coolest”. Goodman’s confidential analysis over the French and British stances helps to better portray how difficult Hanin’s position was in chairing such a kaleidoscopic spectrum of national interests. Surprisingly, according to the British official, the French were unenthusiastic about the creation of a European space agency “but would go along with it provided the UK coughed up for L3S”.⁴⁶ Goodman’s updates and insights on the

⁴³ CHADEAU 1995: 89-91. Hanin was appointed in January 1973 and replaced Théodore Lefèvre who stayed in charge for one year.

⁴⁴ HAEU, ESA, OHES, INT050, Charles Hanin interviewed by Dawinka Laureys, on 28 February 2002: 3.

⁴⁵ LORD 1987.

⁴⁶ The National Archives (hereafter TNA), Foreign and Common Office (hereafter FCO) 55/1233, Very brief Notes of a discussion over lunch on 27 March 1973: 1-3.

French position were even more explicit in the confidential letter that he wrote in June to Christopher Lush, British official at the Department of Industry, Science and Energy. The letter was written after the French visited London during their tour of the European capitals:

I was at a party with the French space crowd on Wednesday. My conversation with Maurice Lévy [Chairman of the ESRO Council] was of particular interest both for its content and tone. [...] Lévy was relaxed to the point of flippancy, and very optimistic about the whole space situation. Everything, he said, would be sorted out satisfactorily in July. He was totally unconcerned about the UK's decision not to contribute to the launcher. He said that with Switzerland, Denmark and one other country – apart from Germany and France – agreeing to contribute to L3S the thing was home and dry – “We don't need the UK”. He added that the UK would be bound, eventually, to come in. Can you really imagine, he asked, that with nine countries participating in L3S the UK will stay out? [...] I am reluctant to create a sense of euphoria about a problem which could go sour. But the signs are that the French seem to think they have found salvation.⁴⁷

Goodman's overall perception was that Paris was offhandedly dismissing the negative effect of the absence of the UK on the entire space program. The French 'flippant' attitude, according to Goodman, was constantly shifting from “very low key 'naughty boy' type [of] speech” to “very reassuring noises” towards the acknowledgment that difference in opinion over launchers would not affect the “Franco-British cooperation and relations in the space field”.⁴⁸ However, Goodman writes, some “French Space officials are privately expecting no (no) [sic] UK contribution to L3S”.⁴⁹ Moreover, London was aware that, despite the French general nonchalance, as highlighted by the British official, the European launcher project was of paramount importance for Paris, and the British financial participation, if anything, would have been incredibly advantageous for its development. The confidential comments expressed by Goodman offer an interesting insight over the French attempt to persuade the UK outside official forums, and the French feelings towards the creation of the European Space Agency.

With all the discordant delegations, the standstill was such that Hanin was forced to postpone the space conference until July 31. The Chair opened the adjourned space conference fearing that no one's attitude had changed,

⁴⁷ TNA, FCO 55/1233, Industry, Science & Energy Department, Perry Goodman to Christopher Lush in a personal and confidential letter, 15 June 1973.

⁴⁸ TNA, FCO 55/1233, Industry, Science & Energy Department, Perry Goodman to Christopher Lush, confidential letter, 21 June 1973.

⁴⁹ TNA, FCO 55/1233, French Launcher L3S, personal for Taylor. Following from Goodman, p. 1.

until another ingredient was added when the US President Richard Nixon imposed a deadline on the Europeans to decide whether to participate or not in the Spacelab programme before August 1972. Hanin saw this as an opportunity to change the delegates' minds because, "grâce à Dieu, les Américains ont été extrêmement égoïste" and they indirectly helped the Conference to overcome this *impasse*.⁵⁰ In fact, Nixon had "informed the Europeans that NASA required a commitment in principle by the end of the year, following which the formal agreements would be prepared for adoption no later than 15 August 1973".⁵¹ Therefore, two mere weeks were left to meet the deadline and find a common understanding over the European cooperation in space. In order to push the national delegations to find a compromise, Hanin decided to listen privately to each national delegation because, as he recalled

Chacun sait qu'il y a des sacrifices à faire, mais il préfère que ce soit le voisin qui les fasse. Et par conséquent, en public comme ça, c'est très difficile d'obtenir quelque chose. C'est alors que j'ai proposé de voir toutes les délégations les unes après les autres [...] pour essayer d'obtenir qu'elles fassent un effort supplémentaire.⁵²

Hanin's intuition in having private audience with each delegation produced surprising results. While the idea of cooperating with the US was still very tempting, its implementation was extremely problematic. In the end, the involved European countries decided to sacrifice some particular goals in the interest of a more long-term commitment and benefit, such as the independent use of the launcher as a global political tool to project national influence in the international arena. At the end of the conference, Hanin, knowing each country's stance, was able to lead the national delegations to agree on all the issues raised during the ESC – from Spacelab to ESA – and "to make formal, financial, legal, and irreversible undertakings, to commit to the entire Ariane development phase over seven years".⁵³ Finally, "la Conférence de Bruxelles a formellement décidé que l'ensemble des trois projets adopté en 1973 constituait un tout indissociables et qu'aucun d'entre eux ne serait exécuté sans les deux autres".⁵⁴ France, Belgium, Denmark, the Federal Republic of Germany, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom agreed to the creation of a

⁵⁰ HAEU, ESA, OHES, INT050, p. 5. On the same issue see: DURAND-DE JONGH 1998: 211.

⁵¹ KRIGE *et al.* 2000, vol. 2: 406.

⁵² HAEU, ESA, OHES, INT050: 4.

⁵³ HAEU, ESA, OHES, INT053: 4.

⁵⁴ Ministère de l'Europe et des Affaires Étrangères (hereafter MEAE), BSG348/1305, Note pour le Ministre by Pierre Laurent, Paris, July 1974: 3.

new organisation called the European Space Agency with the French managing most of the Agency's activities owning 59.5 percent of the shares.⁵⁵ France, in fact, kept her word and took most of the burden. The aim of the Agency would be "to integrate the European national space programmes into a European national space programme as far and as fast as reasonably possible".⁵⁶ On 15 April 1975 the European Space Agency (ESA) was officially established during the ESC in Brussels. Governments, industrialists, and scientists from Western Europe settled officially on a series of agreements that would benefit all the investors, and the final draft of its Convention was signed on 30 May at the Conference of Plenipotentiaries in Paris. The following day, ESA was *de facto* functional and Ariane on its way to be formalized.

LES AMÉRICAINS AND THE EUROPEAN INDEPENDENCE

Ariane's inauguration was recalled by d'Allest with powerful words, which highlight the strong opinions that many French officials held toward the US behaviour. He described the launcher as "an extraordinary opportunity for everyone and for Europe, and was the beginning of the great story of Ariane", endowing Europe with an independent launcher and without being "forced into submission as we had been, ignominiously, by the USA".⁵⁷ In 1974, there was a widespread resentment among French officials toward the American monopoly on the satellite field. According to the French officials "les Américains, qui ont vu avec déplaisir l'Europe d'engager dans la voie d'une politique spatiale commune, encouragent évidemment les tendances favorables en Europe à l'abandon d'"ARIANE". Ils donnent à entendre que le lanceur européen sera, en fin de compte, inutile".⁵⁸ Something along these lines could be probably detected in a Memorandum prepared in 1974 for President Nixon in which it was suggested that "a more forthcoming US policy on launch assistance might undercut European interest in developing an independent launcher and might possibly lead to cancellation of the L3S".⁵⁹ In response to the US behaviour

⁵⁵ Followed by West Germany (19.6%), Belgium (4.4%), Italy (3.3%), Switzerland (2.7%), Spain (2.5%), Sweden (2.4%), the United Kingdom (2.4%), the Netherlands (2.2%), Denmark (0.7%), and Ireland (0.3%).

⁵⁶ HAUE, ESA, Documentation, 24751, Convention for the establishment of ESA, 1975: 3.

⁵⁷ HAEU, ESA, OHES, INT053: 4.

⁵⁸ MEAE, BSG348/1305, Note pour le Ministre, 16 July 1974.

⁵⁹ The Foreign Relations of the United States (hereafter FRUS), 1969-1976, Volume E-3,

and the fear that some European country could change its stance, Edmond Nessler, President of the WEU Assembly, incited rhetorically his European partners:

Do we wish to have a satellite launching capability so as to establish our own telecommunications systems or participate in surveying the resources of our planet? Then as many of us as possible should take part in the construction of a European launcher. Do we wish to exploit the oceans as the source of tomorrow's wealth? Here again we must unite our efforts.⁶⁰

Despite the clear European fear of an American sabotage, it was not until the first launcher development phase that NASA and the US Space industry started to "consider the Ariane [as] a serious challenge to their supremacy in the satellite launch services field". Precisely during the 1970s the US prominent position was secured by the noteworthy Space Shuttle coupled with the Delta and Atlas-Centaur launchers. According to the public statements made by US officials, "the main reason for this lack of concern was that ESA had initial problems obtaining cooperation among its members and readying the first Ariane for flight-testing".⁶¹ This confidence in their capability remained extremely high until the end of the 1970s, when Ariane began to represent a real threat to the US.

Ariane, in fact, offered several advantages in more flexible financing terms, launch-vehicle availability with respect to the delayed Shuttle program and the temporary suspension of the production of the US launchers Delta and Atlas-Centaur. Moreover, Ariane production facilitated the transfer of technology to its customers, especially later on through Arianespace, the first commercial space transportation company officially established in 1980.⁶² Finally, the European spaceport based in Kourou, French Guiana, ensured a great advantage since its proximity to the equator – such as an extra velocity of about 200 meters per second imparted by the Earth's faster rotation at this latitude compared to NASA's Florida launch site.⁶³ In terms of competition, it meant that the Western European governments were able to place heavier payloads into higher orbit increasing the satellites' life expectancy, in comparison to launches made farther north. In

Documents on Global Issues, 1973-1976, eds. William B. McAllister and Edward C. Keefer (Washington: Government Printing Office, 2009), Document 98.

⁶⁰ HAEU, WEU 67, XX Ordinary Session Part 2: 52, December 1974.

⁶¹ CIA, Report, The Ariane Space Launch Vehicle: Europe's Answer to the US Space Shuttle, US Perceptions, July 1, 1983: 2.

⁶² KRIGE *et al.* 2000, vol. 2: chap. 11.

⁶³ CIA, Report, The Ariane Space Launch Vehicle: Europe's Answer to the US Space Shuttle, Other Competitive Tactics, July 1: 6.

conclusion, Ariane was fully operational and ready to compete against the US Shuttle while NASA needed European cooperation in space in order to justify its shuttle cost-effectiveness. In the end, as in the case of the ESC in 1973, the US attempts to hamper the European independence were counterproductive and “helped to create a rationale for Ariane. The [US] actions strengthened *Ariane*” indirectly leading to the first launch from the European spaceport of Kourou in 1979, like JUICE will in 2029.⁶⁴

CONCLUSION

In November 1973, Julian Critchley, British delegate at the WEU Assembly declared that “the real price that Europe has to pay for the fact that the Americans and Russians are coming together” is to achieve a certain amount of independence from the United States. Consequently, and most importantly, Critchley continued, “Europe must alter the nature of her relationship with America in order to preserve the American interest in her security and survival”.⁶⁵ As this article has shown, Ariane is a partial result of this altered relation. Eventually, the European launcher guaranteed world-wide competitiveness for Western Europe by harmonizing technological development, industrial production, structures, and market requirements, exactly as advocated in the 1975 ESA Convention.⁶⁶

The journey toward this ambitious goal was not an easy one. The Europeans encountered serious problems concerning different financial and strategic needs, and independence became a purpose with apparently no viable solutions. The motives that led participating countries to agree to build a common and independent European launcher varied wildly. France’s main reason was a combination of mistrust of the Americans coupled with a yearning for independence in telecommunications satellites and a desire for a leading position in Europe. West Germany, on the other hand, wanted to reinforce its industrial policy and have a say in the French decision-making process. The British, hewing closer to the Germans, and entering the European Common Market, did not want to be excluded from the table either. London hoped to involve its firms with highly advanced technological projects and to occupy a predominant position in Europe. Meanwhile,

⁶⁴ CHADEAU 1995 “The ARIANE L01 Launch took place on 24 December 1979 at 17 hours 14 minutes and 38 seconds GMT. The mission was a total success”. In HAEU, ESA, Documentation, 24778, ESA milestones 1973-2003, Joint ESA/CNES, Press release, December 24, 1979.

⁶⁵ HAEU, WEU 57, XIX Ordinary Session, Part 2, November 1073: 93.

⁶⁶ HAEU, ESA, Documentation, 24751, 1975: 7.

for the smaller stakeholders, the launcher was a tool to ensure contracts, create jobs, share know-how, and gain political influence in a constantly more integrated Europe.

The bulk of these major problems emerged during WEU and ESC meetings, as well as in private conversations, spanning from technicalities to the commercial availability of the launcher. Paradoxically, in the end, each country had to tie itself to a multilateral cooperation in order to achieve its goal, thus limiting its sovereignty while at the same time increasing its degree of independence from the American monopoly. The tool around which the cooperation was built is a launcher with geostationary capability, Ariane, essential for the achievement of a successful communications satellite programme whose benefits the European Union is experiencing today.⁶⁷

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⁶⁷ KRIGE *et al.* 2000, vol. 1: 266; BONNET and MANNO 1994.

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