

→ THE ESA HISTORY PROJECT



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Cover: The European Space Conference held at the Palais d'Egmont, Brussels, on 15 April 1975, which approved the ESA Convention

History Project Johann.Oberlechner@esa.int
Coordinator

Records Management Nathalie.Tinjod@esa.int (ESA HQ)
 Sarah.Humphrey@esa.int (ESTEC)
 Pierre.Kirchner@esa.int (ECSR, ESRIN)
 Mélanie.Legru@esa.int (ESA HQ)

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FOREWORD

On 4 September 2009 a small ceremony was organised at ESA Headquarters in Paris, during which the President of the International Academy of the History of Science (IAHS), Professor Eberhard Knobloch, presented to the Director General of ESA, Jean-Jacques Dordain, the Alexandre Koyré Medal for the work performed under the ESA History Project.

The ceremony coincided with the completion of the second phase of the project and the publication of the last volume, on the history of the Finnish space programme. In awarding this distinguished honour to the ESA History Project, the Academy recognised the impressive work which has been carried out over the 20 years since the project started in 1990.

On this occasion we were very happy to welcome Professor Reimar Lüst, who initiated this project when he was Director General of ESA (1984–90). He also monitored it with fatherly care for almost ten years in his capacity as Chairman of the ESA History Advisory Committee from 1991 to 1999. We were also happy to welcome Karl Reuter, who succeeded him in this role until 2005, and who ensured the continuation of the project and helped to bring it to fruition after Prof. Lüst left ESA.

Among the other distinguished guests present at the ceremony were two of the authors of the ESA History that was published in two volumes in 2000: Professor John Krige, the leader of the project, who is now at the Georgia Institute of Technology in Atlanta, Georgia; and Professor Arturo Russo from the University of Palermo.

Besides the proceedings of the ceremony, this book includes a general overview of the ESA History Project, and a bibliography describing its output in the form of books, symposia proceedings and a series of short histories devoted to the history of ESA's Member States' space programmes. It also includes short contributions from some of the historians about their experiences of working for the project.

Even though the work carried out by the historians is a remarkable achievement, this is not the end of the history of the European space effort. A lot still needs to be done in order to better understand the complexities and intricacies of the processes of European cooperation in space. However, future historians will be able to build on the work and use it as a basis for exploring in more detail other important aspects of the history of the development of Europe in space that have not been treated in the ESA History Project, such as the development and maturing of a European space industry.

I hope you enjoy reading this book and find the material interesting.

Karlheinz Kreuzberg

*Karlheinz Kreuzberg,
Head of the Director
General's Cabinet*





→ OVERVIEW



1.

Overview

*By Johann
Oberlechner*

History tells how laboured were the beginnings of a coordinated European space effort and how difficult and complex the elaboration and implementation of a truly coherent European space policy continues to be. The history of European cooperation in space is a “very tangled piece of technological history,” to quote Hermann Bondi, ESRO Director General from 1967 to 1971, in which politics, economics, industrial policy and other non-space matters interfere with purely space considerations.

For nearly 50 years now, European countries have been cooperating in the framework of ESA and its predecessor organisations ESRO and ELDO. Starting out with cooperation restricted to space science, Europe today has a strong position in a wide range of space activities ranging from basic scientific research to advanced technology and applications, launchers and Europe’s contribution to the ISS (International Space Station).

Today ESA has 18 Member States plus Canada as a Cooperating State. The Agency is at the centre of partnerships with the European Union on Galileo and GMES, with space centres in our Member States for Columbus and the ATV (Automated Transfer Vehicle), with Eumetsat for Meteosat Second Generation and MetOp, with private operators such as Inmarsat and Hispasat for the development of two major telecom programmes (Alphasat and the small geostationary platform) and with international partners (the US, Russia and others) such as on the ISS or the Soyuz launch pad at Europe’s Spaceport in Kourou, French Guiana.

1.1

The core ESA History Project, 1958–87



*Arturo Russo, Lorenza
Sebesta, John Krige*

The ESA History Project began in 1989 when Arturo Russo and John Krige discussed the idea of writing a history of ESA during the International Congress for the History of Science in Hamburg.

After the congress, they wrote to Professor Reimar Lüst (ESA Director General, 1984–90) proposing to write a history of the Agency. The

The ESA History Project

Advisory Committee on the ESA History Project on the occasion of its meeting in Palermo on 7 April 1998. From left to right: Svante Lindqvist, Karl Reuter, Lorenza Sebesta, Michel Bignier, Arturo Russo, Reimar Lüst, John Krige, Paolo Galluzzi, Bruce Battrick, Johann Oberlechner



proposed team of historians of science consisted of Arturo Russo and Michelangelo De Maria with John Krige as project leader. Professor Krige had worked from 1982 to 1990 as a team member and then as project leader on the history of CERN. Professor Russo had already written the history of the COS-B saga. Professor Michelangelo De Maria (La Sapienza, Rome), who withdrew for personal reasons in 1993, was replaced by Professor Lorenza Sebesta from the University of Bologna. At ESA, Karl Reuter was responsible for managing the project, which he did until his retirement in 1999 when he became Chairman of the ESA History Advisory Committee up to the end of the Extended Project in 2005.

The primary documentary sources were the ESA archives then being set up at the European University Institute (EUI) in Florence, where the EU archives are also located. This led to the project being based there. At present, the catalogue contains a complete set of ESA papers up to 1995 (records are made available to the public after 15 years).¹

Work on the core project, ESA's history from 1958–1987, lasted roughly 10 years and was completed in 2000. It was supervised by the Advisory Committee chaired by Reimar Lüst from 1991 to 1999 and included the likes of Michel Bignier, Peter Creola, George Van Reeth, Svante Lindqvist (now Director of the Nobel Museum in Stockholm) and Paolo Galluzzi, Director of the Istituto e Museo Nazionale di Storia della Scienza in Florence.

¹ See www.eui.eu/Research/HistoricalArchivesOfEU/Index.aspx.

1.2

The outcome of the core project

The ESA History Project has yielded a comprehensive and detailed history of ESA, which has been published as ESA SP-1235 in two large volumes (totalling nearly twelve hundred pages). It is also available on the ESA website. The first volume covers the history of ESRO and ELDO and the second the history of ESA up to 1987.

Supplementing this two-volume history, a shorter study on the history of European space activities, *Europe in Space 1960–1973*, by John Krige and Arturo Russo, was published in September 1994 as ESA SP-1172.

One of the key themes they focus on is the process of governmental decision-making through which the framework of collaboration was established. This is a very topical subject and indeed is currently being discussed by the ESA Council.

The work has also yielded numerous studies in the ESA HSR (History Studies Reports) series as well as a large number of articles in relevant specialist journals.

The enormous efforts from 1989 to 1999 also stimulated a considerable number of additional publications of great interest on the space activities of ESA and its Member States. They all form part of the ESA History Project, whether it be Roger Bonnet and Vittorio Manno's *International Cooperation in Space* or the late Jan Stiernstedt's *Sweden in Space*.

In addition, a series of symposia and seminars on European space history topics have been organised as part of the History Project. One of the high points was the international symposium jointly organised by ESA and the Science Museum in London from 11–13 November 1998. The event was attended by leading representatives of European governments, industry and research, and made an important contribution to the development of European space activities. Among those speaking were the then Chair of the ESA Ministerial Council, Lord Sainsbury (UK), and former ministers such as Michael Heseltine (UK), Hubert Curien (France) and Antonio Ruberti (Italy). The proceedings were issued as ESA special publication SP-436.

1.3

History of national space programmes

Whereas the first part of the ESA History Project focused mainly on the intergovernmental collaborative effort in space under the patronage of ESRO, ELDO and ESA, the aim of the second phase was to describe and analyse the histories of the national space

programmes and their interplay with ESA activities. All these histories form an inextricable part of wider European space history.

Even before the extension of the project was approved by Council, it was already clear that work in such a second phase needed to be organised in a different way from the writing up of the core ESA History. It was coordinated by an ESA project leader acting as interlocutor within ESA and vis-à-vis the Member States. An ESA History Advisory Committee was again set up to monitor the work. Professor Krige served as consulting scientist and provided guidance and support in evaluating the proposals received by the interested Member States. Karl Reuter, in his capacity as Chair of the History Advisory Committee from 1999 until 2005, helped ensure the continuation of the project and bring it to fruition.

The second phase started more slowly. In many countries it was necessary first to find a historian or group of historians able to write the history of their national space programmes. A second obstacle to work getting under way promptly was the lack of archives for the historians to draw upon or archives not yet being open to researchers, or incomplete collections of records in industry or national organisations. Therefore it was necessary to complement the sometimes scarce sources by oral history interviews with the main actors involved.

When it became apparent that many national studies would only produce tangible results in the fourth year of the project or even later, the Advisory Committee recommended an innovative approach. Before an in-depth national space history could be completed, each ESA Member State was invited to produce a concise overview of the historical development of its space policy, describing the milestones and turning points in that history. As a result, 15 short studies were produced and published as ESA History Study Reports 26 to 40.

1.4

The results of Phase 2

After 10 years of intensive work, the second phase was completed at the end of 2009. Eight longer space histories have now been published, covering the development of space activities in Germany, the United Kingdom, Belgium, Italy, Spain, Switzerland, Austria and Finland. The authors of these books include doctoral students writing their dissertations, such as Niklas Reinke in Germany, Dawinka Laureys in Belgium, Matthew Godwin in the United Kingdom and Stephan Zellmeyer in Switzerland; or a team of authors involving science historians in the case of Italy (Michelangelo De Maria, Lucia Orlando, Filippo Pigliacelli et al.), Spain (José María

Dorado Gutiérrez et al.), and Ilkka Seppinen and Risto Pellinen in Finland, and Bruno Besser in Austria.

Whereas the two volumes of the ESA History were published in-house by the ESA Publications Division, the Committee suggested that the Agency consider publishing the studies through an external publisher in order to secure wider distribution. Professor Robert Halleux, Director of the Centre d'Histoire des Sciences et des Techniques at the University of Liège and the driving force behind a new series of books called Explorations dealing with studies in modern science and technology, kindly offered to help with finding a publisher, leading to an agreement with Beauchesne in Paris to have the whole series of national histories published.

As part of the celebration of the 200th meeting of the ESA Council in Paris in June 2008, ESA published a small book titled *Cooperating for Success: 200 Meetings of the ESA Council 1975–2008*, which includes the reminiscences of some eminent participants at Council.

France set up its own *Institut Français d'Histoire de l'Espace* in 1999, which has produced a series of books on the establishment of the French space industry and the cooperation between France and the US in space. CNES has also published a book, *Les trente premières années du CNES. L'Agence Française de l'Espace, 1962–1992*, which is also available in English. André Lebeau conducted a long interview with Robert Aubinière, who was the first Director General of CNES and one of the pioneers of the French and European space programmes, a work which was published in 2008.

A well-produced 400-page volume with well-chosen illustrations on the history of Norwegian space activities under the leadership of John Peter Collett was published in 1995 by the Scandinavian University Press, Oslo.

1.4.1

Ongoing activities

John Krige and Arturo Russo, two of the main authors of the ESA History Project, are currently working on two separate research programmes sponsored by NASA.

John Krige, who is now working at Georgia Tech in the US, is currently writing the history of NASA's international relations in space, in particular the chapter on US–European relations.

Arturo Russo has been awarded the first HSS (History of the Science Society)/NASA Fellowship to support a study on the history of the Huygens mission, which will be published in a book on Solar System exploration edited by Roger Launius.

The selection of both historians for these fellowships can be regarded as a further tribute to their work in the framework of the ESA History Project.

1.4.2 **Oral History**

Another important contribution to preserving Europe's space heritage is the history interviews that have been conducted with a number of European space pioneers. The objective is to record the memories and experiences of those individuals in each ESA Member State who have played a central role in the development of European space cooperation, and to make these accessible to researchers and the public. So far, 30 of them have been completed and placed online. The transcripts can be consulted at the EUI website. It is planned to expand this collection until all ESA Member States are represented.

1.5 **Conclusion**

The work that chronicles the history of Europe's space development can be regarded as a truly pioneering effort, which has also been recognised by the IAHS with the award of the 2009 Alexandre Koyré Medal to the ESA History Project. A small ceremony was organised at ESA Headquarters on 4 September to present the award to the Agency in the presence of the historians and Professor Lüst, who together with Karl Reuter initiated the ESA History Project back in 1989.

The biographer of Wernher von Braun, Michael J. Neufeld, has written in his review of the two volumes of the ESA History that they "will set the standard and the starting point for all future efforts". They are not only an important contribution to our understanding of how the European space programme developed, but are also of interest and importance for the history of Europe as a whole.

**→ PERSONAL PERSPECTIVES
ON THE ESA HISTORY
PROJECT**



2.

Personal perspectives on the ESA History Project

The ESA History Project was a personal effort by a number of historians who were not space experts. Their personal perspectives reveal how much they enjoyed the task, and in some cases where it has led them since.

2.1

The legacy of the ESA History Project

By Arturo Russo



Within the framework of the ESA History Project, one of my tasks was the historical analysis of the European effort in space research from the early ESRO times up to the approval of the ESA Horizon 2000 science plan in 1985. Nine years after the conclusion of the project I had a fine opportunity to resume my research work on the history of the ESA Science Programme and study the actual implementation of an important element of Horizon 2000. In 2007, in fact, I was awarded the first Fellowship in the History of Space Science, jointly supported by NASA and the History of Science Society, to study the origin and development of planetary research at ESA.

Europe was a latecomer in planetary science, limited resources and prevailing interests in other fields of space science being the main reasons for the delay. The first ESA mission to a Solar System body was the Giotto mission to Comet Halley, launched in 1985. A second one, the Cassini-Huygens mission to Saturn and its satellites in collaboration with NASA, followed 12 years later. Since then, the European Space Agency has established a solid position in planetary research, boasting the successful Mars Express (2003) and Venus Express (2005) missions, the ion-propelled SMART-1 spacecraft to the Moon (2003) and the ambitious Rosetta mission (2004), aimed at exploring Comet 67P/Churyumov–Gerasimenko in 2014 with an orbiting spacecraft and a small lander. At present, an important mission to Mercury, called BepiColombo, is under development at ESA, and its launch is scheduled for 2014.

The HSS/NASA Fellowship was essentially used to support archival research at ESA's Headquarters in Paris in Autumn 2007 and Spring 2008. Access to these (working) archives is not open to historians, but, given my record as a former member of the ESA History Team, I was authorised by the Director General, Jean-Jacques Dordain, and the Director of Science and Robotic Exploration, David Southwood, to locate and study the pertinent documents. Moreover, I enjoyed important intellectual support from the Solar System Missions Coordinator, Marcello Coradini. The Head of the Corporate Memory and Records Management section, Nathalie Tinjod, and the

staff of the Science Directorate, generously supported my research activity in Paris.

The focus of my historical analysis has been the decision-making process that led to the selection of the various missions of the ESA Science Programme. This process is characterised by a bottom-to-top approach. The European space science community is the source of ideas and concepts for missions. These are then discussed by expert groups and advisory committees, with the Agency providing support for assessment and feasibility studies. Due to the limited financial resources, only one or two missions are selected at the end of each decision-making run. The final decision is therefore the outcome of a highly competitive process involving many levels of interest: the various national and disciplinary sectors of the scientific community; the ESA Science Directorate and technical staff; the European space industry; the Member States' space policies; the relations with NASA and other space agencies, to name a few.

Within this framework, I collected documents related to the selection process of the missions: Huygens (1982–97), Mars Express (1990–97), Venus Express (2001–02) and Rosetta (1985–93). Moreover, I made a number of recorded interviews with key people involved in the implementation of ESA planetary missions. A paper on the Huygens history is about to be published in a book devoted to the history of Solar System exploration. A second paper on Mars Express will be published in the spring 2011 issue of *Historical Studies in the Natural Sciences*. The Rosetta mission will be my research topic in the near future.

2.2

The Spanish interest

By Jose M. Dorado



In the year 2000, when ESA extended its History Project to include all Member States, almost nothing had been undertaken in Spain in this field, and the few efforts made did not serve to guarantee that the memory of the beginnings of space activities in Spain would not be lost. This danger was a real one for two reasons. Firstly was the natural disappearance of the first generation of protagonists, taking into account the time which had elapsed: more than 40 years since the beginnings of this activity. Secondly, there was the poor condition of the archives related to this subject as well as the absence of previous studies and publications. These were both clear symptoms of the lack of an institutional interest in protecting and transmitting a historical memory of Spanish space activities.

The ESA invitation to participate in the project was, therefore, an opportunity to change this situation, and I gladly accepted the

offer from CDTI (*Centro para el desarrollo tecnológico industrial*) to assume its responsibility, as I felt this was an occasion not to be missed. To this end, I approached persons from two different origins: young professionals in the humanities and fellow veterans in the space field. It was tough. The young people, due to the lack of a commitment from any institution that would offer them a professional horizon, never felt really involved with the project; in consequence a constant turnover within this group was experienced. At the same time, the veterans frequently showed a surprising lack of interest in putting their experiences and memories into written form; it was even easy to feel their lack of concern with knowing the history of a profession that had occupied a large part of their professional lives. CDTI's low contribution did not help to improve the situation either; I do not mean an additional financial contribution, but rather the support that would open doors in other institutions and promote a joint agreement for the preservation of this historical memory.

It was not an easy start, but the generous support of a few made it possible to overcome these difficulties and finally a series of studies were undertaken and their results published, the majority being included in a book titled '*Spain and the European Space Effort*', which was edited by the ESA publication division in 2008.

A few years later, when the preparation of the 57th IAC was in progress, an event that took place in Valencia in 2006, I assumed responsibility for the organisation of a history session devoted to Spain, this being a timely coincidence as it permitted the continuation of the ESA activity and a synergy of efforts. The support of a few companies (EADS, SENER and INSA), of certain institutions (the Technical University of Madrid and INTA) and of my colleagues from the IAA History Study Group allowed the responsibilities involved to be satisfactorily fulfilled.

As a result of this IAC session, conversations were held with INTA that gave rise to the Institute's decision to record its own history in the space field in the form of a monumental work in five volumes, three of which have been published so far: '*INTA y el Espacio*', 2008; '*Instalaciones Espaciales en Tierra*', 2009; '*Sistemas espaciales en vuelo*', 2010. This gave new momentum to the project and consequently increased the participation of new people in it.

In addition, some of the individuals who participated in these activities are presently studying the space history of other institutions.

Also worth noting is INTA's decision to review and update its historical records in the field of space as well as those from the former Spanish space commission (CONIE), an activity that also profited from synergies with that part of the ESA project that we

devoted to identifying relevant references for the beginnings of the space activity.

Today, as a result of these efforts, including the additions to what has been identified and made available to researchers, what has been edited and what is in progress, we may affirm with satisfaction that in a few years we will be able to provide over a dozen publications as well as to offer properly organised archives to future investigators.

Without the initial ESA stimulus, none of this would exist and this memory we were trying to preserve might possibly have become a forgotten history.

2.3

Experiences from the Danish interviews

By *Niels Eilskov Jensen*



An old Danish proverb says ‘Let the cobbler stick to his last’.

I am an engineer and should have thought of this proverb when Johann Oberlechner contacted me in 2006 to ask if I (recently retired from ESA and back in Denmark) would like to do some interviews with Danish space pioneers for the ESA History Project.

I agreed – but today I realise that conducting good interviews is very different from designing satellite antennas!

The first thing to decide on was, of course, whom to interview.

ESA agreed to my proposal of taking three key persons from science/technology, industry and the administration. The choice was then easy: Professor emeritus Preben Gudmandsen, Christian Rovsing MEP and Henrik Grage, ESA Council Delegate.

All three agreed immediately to participate, and then my work began.

The easy part was to collect the facts about their lifelong work in the European space sector, and then to prepare a list of topics to guide the interviews. It was much more difficult to find and operate a tape recorder! I finally borrowed an old one from a friend. The recordings of the interviews were not always easy to use for the transcriptions

because of noise or low sound, but finally we managed.

The interviews themselves were very relaxed, and it was a great pleasure to talk with my old friends and share so many common experiences and recollections of exciting moments in the history of European and Danish space history.

The most amazing thing to learn was that Professor Gudmandsen



(L-R) *Henrik Grage, Niels Jensen, Preben Gudmandsen and Christian Rovsing*

(my old teacher in microwaves at the Technical University of Denmark in 1966) at the age of 82 still every day checks out the data from Envisat on the climate in the Arctic, where he has measurement equipment installed.

It took quite a long time to get the transcripts online, but the result is very professional and satisfying.

A happy side effect of the Danish contribution to ESA's Oral History Project is that the four of us have had two delightful lunches together, and we intend to continue this tradition for as many years as we can.

2.4

'A Place in Space' – Swiss participation in European space programmes

By Dr Stephan Zellmeyer (Translated from the German)



Back in 2001, as a history student with an interest in science and technology, I was in search of a subject for my master's research project. I discussed possible topics with one of my professors at that time, Professor Christian Simon, who pointed out that there was still hardly any academic literature on Switzerland's participation in space programmes. After a short time to think it over, I was soon quite sure that, despite my only very superficial knowledge of the subject area at the time, my master's research would indeed be devoted to 'Swiss space activities'.

Up to August 2002, the project took shape as 'Switzerland on the way to space. History of Swiss participation in space activities from 1960 to 1973'. In the course of my research, I had also made contact with the federal administration responsible for space matters in Switzerland: the Swiss Space Office (SSO). Its head at the time, Dr Peter Creola, was soon stating in fairly clear terms that there was scope for expanding the master's project into a thesis within the framework of the ESA History Project.

For me as a student, this was a really exciting message. On the one hand, I had not expected that as a result of my request the doors of a federal authority would be thrown open wide in this way and that I would be receiving substantial support, for instance when it was a question of examining records. On the other hand, as a budding historian, it was also encouraging to find someone from outside the narrow circles of the academic world taking an interest in my work.

It was therefore not hard, having completed the master's degree, for me to be enthusiastic about a three- to four-year thesis assignment on the history of Swiss participation in space programmes. The project application was approved by the Swiss National Science Foundation, and the European Space Agency undertook to provide

the rest of the funding under the ESA History Project. A further boost was provided by the Swiss Space Office.

For me, quite clearly the most interesting phases during the thesis project lasting from 2003 to 2007 were roughly the first two years, which were extensively devoted to doing the actual research. The main focus of attention at this stage was archive searches; but this was quickly supplemented by regular interviewing of the individuals directly involved in Swiss space activities between 1960 and 1987. In addition to representatives of the federal administration, the interviewees also included research scientists and decision-makers from industry. In this phase too, it was very gratifying to find that even some non-historians were following the progress of my work with interest.

But a further factor was also decisive during the research phase: thanks to the incorporation of my thesis project within the ESA History Project, I had relatively simple and uncomplicated access to historians from various European countries who were working on, or had published material on, similar topics. It was therefore possible for me during my stays abroad, at conferences, or via electronic means of communication, to enter into direct exchanges with seasoned historians and their research groups, thus enabling me to draw on a treasury of knowledge which I would not myself have been able to build up in the available time.

In this respect, the ESA History Project to my mind stands as an example of the fact that in the Humanities also, the structured teamwork of different individual scholars or research groups, each illuminating individual aspects of a research topic's 'big picture', is of great value – both for the individual scholars and also as regards the results of the research.

2.5

A history of NASA's international relations¹

By John Krige



For the last three years I have been working under contract to the NASA History Office on a history of NASA's international relations from the early 1960s to the dawn of the 21st century. Two of my graduate students in the School of History, Technology and Society at Georgia Tech are collaborating with me, and will exploit the results for their PhD theses. The work is based on extensive research in the NASA Historical Archive, in other Federal depositories and in Presidential libraries. It is supplemented by about 30 interviews that have been transcribed and deposited at NASA HQ where they are available to the

¹ John Krige's personal recollections about the project itself are given in the transcript of his speech on pages 16-18.

public. The final product was delivered in 2010 and is currently under review by NASA and by a prestigious academic publisher.

The vast scope of NASA's international effort called for a division of labour and for the careful selection of representative projects. I am responsible for relations with Western Europe. Angel Long is dealing with US–Soviet relationships, while Ashok Maharaj is concentrating on NASA's relations with Brazil, India and Japan. All of us have presented preliminary results at various conferences and workshops in the US and abroad.

My contribution involves an overview of 50 years of international collaboration, with a particular attention to Western Europe. This is followed by a survey of NASA's collaboration in select space science projects (e.g. Helios, the International Solar Polar Mission and Cassini-Huygens.) Much of this chapter simply summarises what others have already written, though it does include some original archival research and interview material. Four core chapters based on extensive new research deal with debates over technology transfer, first with ELDO in the mid-1960s and then in the post-Apollo programme in the early 1970s. This major section includes a close study of the impact of the negotiations over the definitive Intelsat agreements on the physiognomy of post-Apollo collaboration that resulted in the construction of Spacelab and played into the decision to develop Ariane. A conclusion to the entire study addresses the history of the International Space Station and draws some general conclusions about the current state of NASA's international posture, and how it is affected by the ITAR (International Traffic in Arms Regulations).

The question which drives my study is this: how does NASA reconcile its two key missions – to maintain US international leadership in space while at the same time fostering international collaboration. I describe in detail the attempts made by the Agency, in consultation with other arms of the administration, to provide scientific and technological support to partners in strategic domains without jeopardising the competitiveness of US industry and the demands of national security. A detailed investigation of how NASA's twin policies of 'clean interfaces' and 'no exchange of funds' were implemented with its partners throws light on the vulnerability of Western Europe in the 1960s and 1970s when the asymmetry in technological and industrial capacity between the two sides of the Atlantic was enormous and the US held a monopoly on the free world's access to space. In the 1980s, with the emergence of Europe and Japan as major space actors, voices in NASA called for a new approach to international collaboration which treated others as genuine partners, and not as junior participants. The conclusion explores how these noble intentions are being thwarted by the

increasing militarisation of space and by the role of ITAR. These are both stunting relations between NASA and its partners, and encouraging other space powers to become more technologically independent. The ITAR are sacrificing US space leadership on the altar of technological denial, leading many to call for an urgent revision of the regulations – and others to insist that they are imperative to protect US interests in a fiercely competitive global market, and as an essential arm in the war on terror.

→ CORPORATE MEMORY



3.

Corporate memory

The long-term preservation and controlled dissemination, for the benefit of Member States and the research community at large, of those valuable sources in which the Agency's memory, knowledge and know-how are embedded is a major objective for the Executive. This legacy represents the continuity of the European endeavour in space and testifies to the sustained commitment of founding members and key players. If continuity does not mean a path which excludes changes, any change has to be framed by fundamental values (*'l'esprit des pionniers'*) and the search for innovation and excellence.

3.1

Europe in space: corporate memory and records management

Under the responsibility of the former Director of Administration, George Van Reeth, ESA began to consolidate its archives in 1989 with a *'Contrat de dépôt'* signed with the EUI. In doing so, the Agency had three objectives: to safeguard the heritage of its forerunners (COPERS, CETS, ESC, ELDO, ESRO); to provide a solid archival and historical base for research on the building of a European space power; and to promote its achievements through increased transparency regarding its decision-making process and the management of its programmes. The Institute being one of the most attractive and stimulating world-class places of learning, this cooperation significantly increased the visibility of ESA within the various research communities and amongst EU stakeholders.

Thanks to the valuable cooperation of the EUI team in charge of the Historical Archives (in particular Jean-Marie Palayret, Director; Gherardo Bonini, Archivist; Susanna Peruginelli, Librarian) and to the commitment of Gabriel Lafferranderie (then Head of the ESA Legal Department), the project was quickly up and running, and the research communities soon reaped the benefits. The dedication of Eva Vermeer, Emanuela Andreatta, Marie-Angèle Lemoine and Nathalie Tinjod at Headquarters, as well as Jean-Jacques Régnier, Liliane Valentin and Sarah Humphrey at ESTEC were crucial for the accomplishment of this *'mission patrimoniale'*.

The ESA History Project was the first to exploit these historical archives. Led by Professor John Krige and coordinated by Karl-Egon Reuter and Johann Oberlechner (of the ESA Director General's Cabinet), it produced an impressive result, contained in two large

The ESA History Project

*Villa Il Poggiolo
currently hosts the
EU and ESA Historical
Archives*



volumes and a collection of monographs covering the histories of ESRO and ELDO, and the history of ESA until 1987.¹

The continuation of the ESA History Project draws on the archives of the Member States to build the history of those national programmes that have sustained and complemented the international effort. This led in particular to the publication of eight additional monographs. An oral history project is also part of this initiative, with the support of Catherine Previti (EUI, Senior Archivist) and Giuliano Terzuoli (EUI, System Administrator) with the handling of over 30 oral testimonies.²

Today, the bulk of records over 15 years old on European collaboration and joint undertakings in space are preserved at the EUI. Historical archives (COPERS, CETS, ESRO, ELDO, ESC, and ESA) that are in the public domain now amount to more than 35 000 files. The catalogue can be consulted online.³

The magnificent Villa Salviati in Florence, Italy, has been restored to become the permanent seat of the EU Historical Archives when it moves from Villa Il Poggiolo in late 2011. The new premises will also host ESA's and its predecessors' archives. The inauguration ceremony took place on 17 December 2009 in the presence of the President of the Italian Republic Giorgio Napolitano and prominent representatives from the European Commission and European Parliament. "We are sure that ESA's institutional memory, and the spirit of the founding fathers, will inspire in this prestigious location the reflections of future generations and the promotion of the Europe of tomorrow," as ESA

¹ See www.esa.int/SPECIALS/ESAhistory/.

² See www.arc.eui.eu/HAEU/EN/OH_esa.asp.

³ See www.arc.eui.eu/HAEU/EN/esa.asp.

Director General Jean-Jacques Dordain wrote to Josep Borrell, former president of the European Parliament and current president of EUI.

3.1.1

Records management

A favourable Audit (ESA/AUD/9501) was carried out in 1995 and ESA Council recommended during its 119th session to “properly manage the documents recording the history of the Agency” (see ESA/C/MIN/119, item 11.3 and ESA/IRC/MIN/29, item 9). This led to the recruitment of a Records Manager at Headquarters, in January 1999. Since 11 September 2001, Records Management is regarded as risk management applied to recorded information.⁴

To face the challenges ahead, the Agency is currently adopting a set of policies and procedures governing the management of information, in particular in digital format. Fundamental principles laid down in these policies and their implementing documents are based on widely adopted standards and model requirements.⁵

The Agency is committed to:

- Effectively and efficiently managing information, regardless of format or media, throughout its life cycle, to enhance the decision-making process and to support risk management strategies and mission-critical operations;
- Establishing procedures and promoting standardised practices enabling the controlled exchange of information across the Agency, thus facilitating the effective performance of activities, as well as the cross-fertilisation of programmes;
- Identifying, selecting and preserving records that document the organisation and its functions, policies, decisions, procedures, actions and transactions;
- Ensuring that documents and records support the protection of statutory, legal and financial rights of the Agency, its stakeholders and persons directly affected by its activities, and are accepted as evidence in case of litigation or dispute;

⁴ Records: information created, received and maintained as evidence and information by the Organisation, in pursuance of legal obligations or in the transaction of business. They may be unstructured records (intended to be used by human users: letters, memoranda, e-mail messages, pictures, photocopies, scanned images, audio and video recordings) or structured records (containing information in a form intended to be used primarily by computer applications, e.g. accounting system records, etc.).

⁵ In particular: ISO 15489: 2001 (*Information and documentation – Records management*); ECSS-M-ST-40C Rev.1: 2009 (*Space project management – Configuration and information management*), for technical documents of external origin (e.g. delivered by Industry); MoReq2 Specification (*Model Requirements for the management of electronic records*); ISAD(G) – *General International Standard for Archival Description*.

- Ensuring that authoritative records are captured, and can be located, retrieved, presented and interpreted when, where and for as long as they are required;
- Protecting temporary, permanent and vital records against deterioration, loss, theft, unauthorised annotation, addition, alteration, concealment or deletion, as well as unauthorised access, release, or use;
- Verifying that business continuity planning and contingency measures identify those documents and records that are vital to the continued functioning of the organisation as part of the risk analysis and that they are protected against disasters and other emergencies;
- Disposing of controlled documents and records only in accordance with approved retention schedules and disposal authorities.

Only roughly 7% of all documents produced or acquired by the Agency manage to survive the rigorous filtering that all records have to go through at various stages of their existence and actually become either historical or other permanent records.

In the meantime, records in use, evolving, or needed for current activities or reference have to be preserved and made available. They are kept in current (active information), intermediate (semi-active information) or final (inactive information) archives. The location, content and management of these archives depend on their short-, medium- or long-term interest, their provenance and level of confidentiality.

*European Centre for
Space Records at ESRIN*



ESA/MAE Convention
signing ceremony, 2006



In order to ensure the preservation of valuable R&D records of completed projects and their management archives, including contract files, final reports, executive summaries, patents, reviews files, etc., the first building erected on the ESRIN site in 1967 was converted in 2002, thanks to the dedication and efforts of Daniel Sacotte, then Director of Administration, and Brian Walker, then Head of Director General's Cabinet. This facility, named the European Centre for Space Records (ECSR), and managed by Pierre Kirchner, also gives the Agency the capacity to house the project records built up by industry. A substantial collection of historical pictures and negatives is also kept and exploited through various '*actions de valorisation*' (exhibitions, publications, etc.).

What is said during the meetings of ESA deliberative bodies is recorded on magnetic tapes. Such tapes are vital when resolving cases of contention, and they are stored for the Agency by the *Centre des Archives Contemporaines* at Fontainebleau, France. A '*contrat de dépôt*' concluded with this body in 1996 provides for their safekeeping. Unfortunately, the tapes recorded before 1994 were discarded at the time and are lost to us. Since 2007, official meetings have been digitally recorded.

The Agency also concluded a '*convention de dépôt*' with the *Musée de l'Air et de l'Espace* (MAE, Le Bourget, France) to ensure the preservation of invaluable films and audiovisual materials. This Convention was signed by Jean-Jacques Dordain and Gérard Feldzer (MAE Director) during the 2006 Paris Air Show. More than 400 audiovisual records have since been deposited and are currently indexed.

A digitalisation programme is envisaged for valuable historical images, to complement what is already available online (Multimedia Gallery at www.esa.int/esa-mm/mmg/home.pl).

The digitalisation and diffusion via internet of documents of great importance and/or those that are frequently requested for consultation is also intended.

The professional affiliations in this field include the section for international organisations of the International Council on archives. The ongoing exchange and confrontation of methodological experiences has led to several joint undertakings.

3.2

20 years of cooperation between EUI and ESA (1989–2009)

The EUI and ESA have been closely linked since the late 1980s with the aim of safeguarding and making the most of the legacy of the pioneers of the European space effort. This cooperation, marked by trust and excellence, has been very fruitful, whether in the area of handling the historical archives of the European space organisations, for which the EUI is the custodian, or of ESA's History Project, which was initially hosted at the Institute, when Professor John Krige held a chair there. Scientific work is chained to the course of progress and much decision-making can benefit from the intellectual capacities present in both institutions.

Created in 1972, when the six Founding States of the Common Market signed an international convention to this effect, the European University Institute is a point of reference in doctoral and post-doctoral comparative and multi-national research in the social sciences. Since then it has expanded to include new members of the enlarged European Union (19 out of 27) and has associate links to other countries, including Switzerland, Norway and Turkey. Thanks to the support of Italy and Spain, grants are also offered to Eastern countries beyond the EU, to applicants from the Mediterranean area and to Latin American students.

Over the years, the PhD programme has been completed and enriched by the setting up of a post-doctoral programme in the interdisciplinary research centre, the Robert Schuman Centre for Advanced Studies, and later by the Max Weber programme for young academics, launched in 2005. At the same time, scholarships for senior fellows (Marie Curie and Fernand Braudel grants) have made it possible for the IUE to benefit from the experience of talented academics from all over the world. Today, the Institute is an academic community consisting of 55 professors, 100 post-

doctorates and 600 researchers plus assistants, fellows and visitors to the departments and centres, with deep roots in European culture but also an international and global vocation.

Josep Borrell (former President of the European Parliament) took office as President of the European University Institute in January 2010. His predecessors were: Max Kohnstamm, Werner Maihofer, Emile Noël, Patrick Masterson and Yves Mény.

3.2.1

A brief history of the EUI⁶

The idea of a ‘European Institute’ to complement the construction of Europe in the field of higher education was first advocated by the pro-European movements at the Hague Congress (May 1948), and the European Cultural Conference (December 1949).

The project only took shape at governmental level, however, during the ‘relaunch’ of Europe initiated by the Messina Conference (1955). Walter Hallstein, the German Secretary of State, promoted the idea of a ‘European University’ under the Euratom Treaty, which was originally conceived to coordinate the Member States’ research programmes for the peaceful use of nuclear energy, as a training centre for nuclear sciences and a direct Community institution. The university was to be an instrument of integration, which would educate the elite of the new generations in a spirit far removed from the nationalisms of the past.

All attempts to realise a ‘European University’ failed, despite determined action by the Italian government (Gaetano Martino and



EUI, Badia Fiesolana

⁶ www.eui.eu/About/HistoryofEUI.aspx

Amintore Fanfani), the European Commission's interim committee chaired by Etienne Hirsch, and the European Parliament. This failure was mainly due to opposition from General de Gaulle and from national academic hierarchies. The French government defended the '*Europe des Patries*' and wished to avoid a university institution under Community law, to preserve state prerogatives in awarding degrees, and to rely on national centres of excellence with a 'European vocation', as suggested by the philosopher Gaston Berger.

In particular, de Gaulle's Fouchet Plan re-examined the question (*Commission Pescatore*) outside the framework of Euratom, focusing on cultural cooperation among 'the Six'. European academics were reluctant to support the project for fear that it would lack the necessary cultural roots and drain off public funds.

It was thus in an intergovernmental framework that heads of state and government met in Bonn in July 1961. After an interruption caused by the 'empty chair crisis'⁷ and a second relaunch, sparked by the 1968 university crisis, the project was put back on the table in The Hague in December 1969, with a solemn resolve to fund a 'European University Institute in Florence'.

The two conferences which followed in 1970–71 in Florence and Rome on the initiative of the Italian government produced a plan that was more modest in size and content: the University would no longer be a direct Community institution and would be reserved for postgraduate studies.

The difficult negotiations that followed led to a Convention creating a 'European University Institute' signed by 'the Six' in 1972. In the meantime, three new Member States (the United Kingdom, Ireland and Denmark) had applied to join the European University Institute and participate in the work of its preparatory Committee.

The Institute's mission was to "foster the advancement of learning in fields which are of particular interest for the development of Europe". The EUI opened its doors to its first 70 researchers in November 1976.

The prestigious historical buildings that host the Institute (Badia Fiesolana, Villa Schifanoia, Convento di San Domenico, etc.) have been put at its disposal by the Italian state.

Amongst these premises, the Villa Salviati is designed to become the new seat of the Historical Archives of the European Union (agreed in the 'Joint declaration on the XXth anniversary of the deposit of the historical archives of the European Institutions at the EUI in Florence', signed on 27 September 2004 by the President of

⁷ On 30 June 1965, France withdrew its EEC representative after a series of differences. This was the first time that a Member State sabotaged the operation of the EEC, and became known as the 'empty chair crisis'.

the Commission, Romano Prodi, and the President of the European University Institute, Yves Mény).

3.2.2

The Historical Archives of the European Union (HAEU)

The HAEU is administered by the EUI and financed by the general budget of the EU. In February 1983, a decision was taken by the Council of Ministers and the European Commission to open up to the public, after a period of 30 years, the historical archives of the European Communities. On 17 December 1984 the EC institutions decided to deposit their archives of historical significance at the European University Institute. In thus doing, they had three main objectives: to provide a solid archival and historical base for research on the European unification process; to promote the idea of integration through increased transparency regarding the European institutional functioning; and to consolidate the role and the authority of the EUI as a centre of excellence for studies on European affairs.

In practice, the terms of the contract make the Institute responsible for receiving, preserving and sharing with the public documents which are over 30 years old coming from the various institutions of the European Communities: Coal and Steel, the Common Market and Euratom, with the exception of the Court of Justice.

Following the Joint Declaration by Prodi and Mény mentioned above, the HAEU has another vocation: that of collecting, in the form of deposits or private collections, the archives of political personalities or senior officials (over one hundred to date, e.g. Alcide de Gasperi, Altiero Spinelli, Emile Noël and Paul-Henri Spaak) of movements or international organisations (ESA and OECD, the Organisation for Economic Co-operation and Development) that played an integral role in the process which led to the construction of Europe.

Microfilmed copies of documents held in national archival institutions or European foundations that illustrate the various Community treaties or enlargement negotiations were also acquired. The holdings are assembled into three separate groups: Fonds from the European Communities institutions, Deposits, and Collections.

The deposits were acquired as part of the Historical Archives' active acquisition policy to complement and enhance the official holdings of the Archives. They are deposited in Florence under conditions laid down in a contract between the depositor and the Historical Archives. The contracts cover the arrangement, description, conservation,

access and reproduction of the documents, and the HAEU respects the wishes of the depositor.

The HAEU has taken part in collecting oral sources, including the testimony of politicians and high officials, and is involved in various research projects regarding the process of European unification.

In 2008, the HAEU registered over 1400 visitors and made available 6600 files in the reading room. The collections (*L'intera Memoria dell'Europa di Pace*) are all listed on the internet (EURhistAR database, 240 000 documents).⁸

3.2.3

Inauguration of the new seat of the Historical Archives

Villa Salviati, Fiesole (Florence, Italy), 17 December 2009

In December 1985, the former Historical Archives of the European Communities (HAEC at that time) opened in a building made available to the Italian State by the regional Council of Tuscany, Villa Il Poggiolo. They were granted guarantees and immunity by the hosting country, which is a prerequisite for the deposit of ESA documents and papers, also covered by privileges and immunities. In 2009, the documents held in this villa occupied 5500 metres of shelving, the maximum space available. The decision had thus to be taken to transfer the archives to a more spacious, highly prestigious, building: the Villa Salviati. The new site, which has twice the archival capacity, will have state-of-the-art means of conservation and consultation.

Villa Salviati was acquired and restored by the Italian Government to accommodate the Archives and the Robert Schuman Centre. The Salviati (“fra I primi banchieri della globalizzazione”), related to the Medici family, were one of the most important noble families of the Florentine Renaissance period. The villa is thus made up of a main building dating back to the Renaissance era, and a long aisle building (*la manica*) composed of the former stables and the *limonaia*. Next to the villa there is a first formal garden with an ‘articulated’ design, and a second garden, on a lower level, with adjacent decorative grottoes. The large park covers 14 hectares and includes a lake.

The restoration (‘integrated conservation’) had two goals: to safeguard the architectural value and to render the villa functional for its new use – thus the visionary idea of building an underground repository for the Archives, exploiting the terraced structure of the

⁸ www.eui.eu/Research/HistoricalArchivesOfEU/Index.aspx.



Villa Salviati



Salviati before restoration



Overview



Grottoes



Patio



Top: HAEU inauguration ceremony, Florence, 12 December 2009

Bottom left: EUI President Josep Borrell

Bottom centre: Catherine Previti, Senior archivist HAEU; Pierre Kirchner, ESA; Gherardo Bonini, senior archivist HAEU

Bottom right: Giuliano Terzuoli, HAEU System Administrator

villa and the garden. This solution had the advantage of offering an environment that could house the latest state-of-the-art technology and also preserve the villa's original beauty. Offices and consultation rooms will also be accommodated. The main building will also be used for international conferences and to host the meetings of the EUI governing bodies.

The new premises were officially inaugurated on 17 December 2009, in the presence of the President of the Italian Republic, Giorgio Napolitano. Before giving the floor to the *Capo dello Stato*, Professor Yves Mény conveyed his gratitude to the hosting State authorities and to the representatives of the EU institutions for the continued support provided to the Institute. Evoking the complex genesis of the project, he underlined the necessity of preserving and transmitting the cultural heritage of Europe, and invited decision-makers to make the most of the high-level research produced within the Institute.

Also attending the ceremony were Andrea Ronchi, Italian Minister in charge of European policy; the former President of the European Commission, Romano Prodi; the former President of the Council of Ministers of the Italian Republic, Giuliano Amato; as well as many senior officials from various Member States or intergovernmental organisations. Among them was Miguel Angel Martínez, Vice-President of the European Parliament, who mentioned in his speech

*Jean-Marie Palayret,
HAEU Director*



*President of the Italian
Republic, Giorgio
Napolitano; Yves Mény,
former EUI President*



*Pierre Kirchner, ESA,
Administrator of ECSR;
Nathalie Tinjad, ESA
Records Manager;
Jean-Marie Palayret,
HAEU*



his profound emotion to be standing in a place so “chargée d’histoire”. He was referring not only to the Florentine Renaissance, which changed the face and fate of Europe, but also to the memory of the founding fathers of the European Communities “qui l’ont pacifiée”. All the speakers expressed the hope that the inspirational

spirit of the pioneers would instil in future generations the political will to further develop and unify Europe, to solve recurrent problems and face the challenges ahead.

Josep Borrell, former President of the European Parliament and now leading the future of the Institute, summarised those challenges during the handover ceremony that was held the day before: “We must be aware of the fact that climate change, growing competition from emerging economies, mass migration, energy and food crises, trade and financial liberalisation, international terrorism and rising inequality are transforming the lifestyles of European citizens and opening windows of opportunity for us to tackle these global challenges successfully.”

No doubt the cooperation between the Institute and the European Space Agency will be successfully pursued in the next decade and that brainstorming, cross-fertilisation and tangible results in the field of R&D will prove beneficial to decision-makers and European citizens.

3.3

The Oral History

3.3.1

Overview of the Oral History

Researchers writing contemporary or present-day histories recognise that oral testimonies are essential to fill the gaps in written sources, or to circumvent their unavailability – arising from the lack of patrimonial awareness or their momentary inaccessibility, due either to restrictions on access (e.g. the 30 years rule) or a culture of secrecy (e.g. in the aerospace industry).

As key players involved in the 20th century space achievements were disappearing one after another, it was more than time to

collect, in an interactive manner, the account of their unique life experiences. Oral history is spoken history, subject to all the vagaries inherent in human memory. Subjective by nature, but rich in specific information, the oral testimony constitutes a representation of reality. This reconstruction, which is nevertheless not fictional, needs to be subject to the same tests of evidence as other archives. It has to be examined along with other contemporary sources for corroboration and authentication, and criticised.

Obviously, one cannot trust a single eyewitness account. The very principle of oral history thus rests on the *collection* of multiple records via a process that is intentional, serial and curatorial. These narratives must be indexed, safeguarded and made available to researchers. Such commitments weigh heavily on archivists.

With this in mind, ESA started its 'Oral History of Europe in Space' project with the collaboration of professional historians as well as senior archivists from the EUI. The objective of this project is to record the memories and experiences of those individuals who have played a central role in the development of European space cooperation, in order to make them accessible to those who have a legitimate interest in space activities. It includes transcripts of a series of historical interviews with key personalities within ESA Member States who have worked in ministries, space agencies, scientific institutes and industry. The interviews cover all areas of space activities: space science, Earth observation, telecommunications, navigation, launchers and human spaceflight.

About 20 interviews were conducted in the 1990s by senior historians (John Krige, Arturo Russo and Lorenza Sebesta) in the framework of the ESA History Project, to supplement official written records. Interviewees were space pioneers, scientists or administrators involved in the setting up of European space organisations (e.g. General Robert Aubinière, Sir Hermann Bondi, Jacques Blamont, Renzo Carrobio di Carrobio, Maurice Lévy, Giampietro Puppi, François de Rose, etc.). These transcripts are currently under review and will be added to those already available for online consultation.⁹

Of the interviews conducted by historians involved in the second phase of the ESA History Project (Dawinka Laureys, Matthew Godwin, David Redon, Stephan Zellmeyer, and others), 30 have been transcribed, edited for accuracy and clarity, sent to the interviewees for review, corrected and indexed. Further in-depth interviews with prominent space pioneers in Germany, Sweden, Austria and the United Kingdom are planned for 2010.

⁹ See www.arc.eui.eu/HAEU/EN/OH_esa.asp.

3.3.2

The interviews

Interviewee



Frédéric d'Allest

Interviewer

DAVID REDON

Date

19/11/2002

D'ALLEST, FRÉDÉRIC

Educated at the École Polytechnique and the École Nationale Supérieure d'Aéronautique, he joined the Project Team of the Diamant B launcher at CNES in 1966. In 1970, he went to ELDO as Project Manager for the 2nd stage of Europa 3. Back at CNES in 1973, he served as Director of Launchers from 1976 to 1980, overseeing the first launch of Ariane in 1979. He was founder and President of Arianespace (1980–90) and was Director General of CNES (1982–89). In 1990, he joined the industrial group Matra as Director General, and after the creation of Matra-Hachette, he served as Directeur Délégué and Member of the Council of Gérance of the Lagadère group.

Main topics covered

Launchers: Diamant, Europa 3, Ariane; space exploitation: Arianespace; CSG, space policy

Interviewee



Marcel Ackerman

Interviewer

DAWINKA LAUREYS

Date

11/12/2002

ACKERMAN, MARCEL

Initially worked at the Paul Goldfinger Laboratory (Université libre de Bruxelles) on gas phase photokinetics and high-temperature mass spectrometry to determine dissociation energies of diatomic molecules of metals. He obtained his doctorate in 1960. He studied chemical reactions in crossed molecular beams at Brown University (USA, 1961–62). Back in Belgium, he worked from 1963 to 1996 at the National Space Research Centre and then at the Belgian Institute for Space Aeronomy founded by Marcel Nicolet, where he was eventually appointed Director. He notably contributed to the determination of the atmospheric composition from 10 km to 250 km of altitude.

Main topics covered

Belgian space policy, aerospace industry, IAS, mass spectrometry, Spacelab, Mars exploration

Interviewee**ASHFORD, DAVID***David Ashford***Interviewer****MATTHEW GODWIN****Date**

22/10/2007

Graduated from Imperial College London in aeronautical engineering and spent one year at Princeton (research on rocket motor combustion instability). He worked on the European Aerospace Transporter studies in the early 1960s with the Hawker Siddeley Aviation Advanced Projects Group before working as an aerodynamicist, project engineer, project manager on the DC-8, DC-10, Concorde, the Skylark Sounding Rocket and several missile and electronic warfare systems. He co-wrote a book on space tourism (Headline, 1990).

Main topics covered

Aerospace industry, space exploitation, ATV, Concorde, Hotel spaceplane, UK space policy

Interviewee**ATKINSON, HARRY***Harry Atkinson***Interviewer****MATTHEW GODWIN****Date**

01/05/2008

Studied physics in New Zealand and completed a PhD at Cambridge University. In 1972 he joined the British Science Research Council, as Head of the Astronomy and Space Division. From 1979 onwards, he was Under Secretary and Director of Science and International Affairs at SERC (Science and Engineering Research Council). He also played an important role in ESRO and ESA, as the UK delegate to Council from 1972 to 1984 and Chairman from 1984 to 1987.

Main topics covered

UK research policy, Harwell, Rutherford, European space cooperation, LIIS launcher, Spacelab, space science, ESA Council chair

Interviewee

BALSIGER, HANS



Hans Balsiger

Interviewer
STEPHAN
ZELLMAYER

Date
11/04/2008

After a PhD in physics in 1967, he held various positions at Bern University in the Space Research and Planetology Division. He was Professor of Experimental Physics (Extraterrestrial Physics) from 1984 to 2003 and was PI and CoI on more than 12 ESA and NASA space science missions. From 1993 to 2002, he was Director of the Physikalisches Institut. He participated in, and chaired, various committees, commissions, steering boards or working groups dealing with space science from 1979 to 2003. In particular, he chaired the ESA Science Programme Committee from 1996 to 1999.

Main topics covered

Space science, aerospace industry, Swiss space policy, manned space missions, space exploration

Interviewee

BIGNIER, MICHEL (1926–2006)



Michel Bignier

Interviewer
DAVID REDON

Date
21/10/2003

Educated at the École Polytechnique and the École Nationale Supérieure de Télécommunications and first based at the missile flight Test Centres in Brétigny and Colomb-Béchar (1953–61), he became the General Secretary of the French Committee for Space Activities. He was Director for International Affairs at CNES (1962–71) and a member of various ESRO, ELDO and CETS bodies, including ESA Council while CNES Director General (1971–76). He served as Director of the Spacelab Programme at ESA from 1976 to 1980 and was Director of Space Transportation Systems from 1980–86.

Main topics covered

Military launching sites in Algeria, CSG, CNES, launchers; satellites: Symphonie, Meteosat; international cooperation: India; manned space missions, Hermes, space insurance

Interviewee**BOLLAND, JEAN-PIERRE***Jean-Pierre Bolland***Interviewer**

DAWINKA LAUREYS

Date

18/12/2001

After studying engineering at the University of Liège and the École supérieure d'électricité in Paris, he joined ACEC (radar and fire-control systems, radio telecommunication transmitters-receivers). Together with Mr Désirant, he set up ETCA SA in 1963, becoming its Technical Director. He became Head of the ACEC Electronics Division in 1973 and CEO at ETCA. In 1990, after ETCA was incorporated into Alcatel Space, he became Vice-President of its Space Division, including non-French space subsidiaries. Later, he represented Alcatel on Space Systems/Loral's steering board at Palo Alto. He held various administrative posts during his career (Arianespace, Eurosat, COSMOS and Belgospace).

Main topics covered

Aerospace industry, Hawk missile, Vogelpik launcher, ELDO, industrial return, Blue Streak, ESRO-2, HEOS, Symphonie, Belgospace, Eurospace, Eurosat, Ariane

Interviewee**BONNET, ROGER-MAURICE***Rogier-Maurice Bonnet***Interviewer**

JOHN KRIGE

Date

10/02/2005

Doctor in Physics (Sorbonne, 1968), he directed the Laboratoire de Physique Stellaire et Planétaire (of the CNRS, 1969–83). As Director of the ESA Science Programme (1983–2001), he established ESA's first long-term programme, 'Horizon 2000'. He was also entrusted with defining the European strategy for Earth Sciences and Observation, now called the 'Living Planet' programme. Between 2001 and 2006, he served as an advisor to the Director General of ESA, on the 'Aurora' programme of planetary exploration. He was Directeur général Adjoint for Science at CNES in 2002, has been the Executive Director of the International Space Science Institute (ISSI) in Bern since January 2003 and was President of COSPAR from 2002 to 2010.

Main topics covered

Military launching sites in Algeria; scientific cooperation: USA, USSR; international space exploration, scientific missions, Horizon 2000, ISS, ITAR regulations

Interviewee

CAUSSE, JEAN-PIERRE



Jean-Pierre Causse

Interviewer
DAVID REDON

Date
19/03/2003

After attending the École normale supérieure, he was a researcher with the Paris Observatory from 1952 to 1955, then worked as a physicist for the Schlumberger Limited research centre in the US until 1960. He joined CNES as Director of the Satellites Division, where he was responsible for the first French satellites, FR-1 (1965) Diapason (1966) and Diadème 1 and 2 (1967). He directed the CNES space centre of Brétigny from 1966 to 1969. In 1967–68 he served as Chairman of the Advisory Committee on Programmes of the European Space Conference. In 1969, he became Deputy Secretary General of ELDO and Director of Future Programmes.

As ELDO wound up in 1973, he was appointed Head of the Spacelab programme at ESRO. He directed the Spacelab programme from 1973 to 1974.

Main topics covered

Space exploration, application satellites, CNES, SEREB, launchers, ESRO, ELDO crisis, Causse Report, post-Apollo programme negotiations, Spacelab, Hermes

Interviewee

CREOLA, PETER



Peter Creola

Interviewer
STEPHAN
ZELLMAYER

Date
06/02/2008

After obtaining a PhD in Space Law at the University of Zurich (1967), he held various positions in the Federal Government in Bern as an expert on space matters. He was the founder and first Head of the Swiss Space Office from 1998 to 2002. He served as Chairman of the Ariane Programme Board at ESA (1978–81), Head of the Swiss Delegation to ESA (1980–2002) and chaired the ESA Long-Term Space Policy Committee (1993–2002). From 1994 to 1996 he was President of the European Southern Observatory.

Main topics covered

European space policy, application satellites, scientific missions, Horizon 2000, launchers, small countries, aerospace industry, space exploration, LSPC chair

Interviewee**CURIEN, HUBERT (1924–2005)***Hubert Curien***Interviewer**

DAVID REDON

Date

14/10/2003

After obtaining a doctorate in crystallography and solid physics from the École normale supérieure, he soon became professor at Paris VI. In 1966, he took on research administration responsibilities, most notably as Director General of CNRS (1969–73). He served as President of CNES (1976–84) and chaired the ESA Council (1981–84). As a minister, he held portfolios for Research & Technology (1984–86 and 1988–92) and Research & Space (1992–93). He was President of ESF, the National Air & Space Academy and the Académie des sciences.

Main topics covered

French space policy, CNES crisis, ELDO, CSG, Symphonie, manned space missions, Spacelab, Hermes, Ariane

Interviewee**DELOFFRE, BERNARD***Bernard Deloffre***Interviewer**

DAVID REDON

Date

20/03/2003

Studied at the École Polytechnique (1958), the École Nationale Supérieure de l'Armement (1961) and at INSEAD-Stanford University (1971). He joined CNES in 1967 and was appointed to the Centre Spatial Guyanais in Kourou, French Guiana, where he became Deputy Director (1969–71) and then Director (1971–73). He was then nominated French Executive Secretary of the Franco-German Symphonie telecommunications satellite programme (1973–75). In 1975–76 he served as Spacelab Programme Director at ESA. In 1982, he co-founded the European Satellite Consulting Organization, and in 1985 he joined Aerospatiale as Hermes Programme Director. After six years in this position, he joined Alcatel Space as Executive Vice-President, and then became Senior Vice-President of Alcatel Space Industries. He is now Senior Partner and CEO of Satel Conseil International.

Main topics covered

Military launching sites in Algeria, Europa launching pad, CSG, CNES, Symphonie, USSR, aerospace industry, Hermes

Interviewee

ENGSTRÖM, FREDRIK



Fredrik Engström

Interviewer
NINA WORMBS

Date
29/08/2006

After his PhD (Stockholm University, 1971), he became Project Manager at the Space Technology Group (sounding rockets). As President of the Swedish Space Corporation (1972–85), he was behind the decision to undertake the first Swedish satellite project, Viking, and later the Nordic spacecraft, Tele-X, for direct broadcasting for business communications. He was the Swedish delegate to ESA Council (1979–85), Director of Space Station and Platforms at ESA (1985–94) and Director of Launchers from 1994 to 2001.

Main topics covered

Swedish space policy, sounding rockets, ESRANGE, Kiruna, aerospace industry, Tele-X, Viking, Earth observation, ESA functioning

Interviewee

GEISS, JOHANNES



Johannes Geiss

Interviewer
STEPHAN
ZELLMAYER

Date
05/02/2008

After his doctorate at Göttingen University (1953), he worked at various European and American research institutes and universities (Göttingen, Bern, Chicago, Miami, New York, Houston, Toulouse, Greenbelt and Heidelberg). He was Director of the Physikalisches Institut in Bern (1966–89), Rector of the University of Bern (1982–83), and Executive Director and Honorary Director of the International Space Science Institute, ISSI (1995 to present). He was a member of, and chaired, various committees, advisory boards and working groups involved in space science, mainly for ESRO, ESA and ESF.

Main topics covered

Space exploration, astronomy, mass spectrometry, ESRO, European launcher, aerospace industry, Horizon 2000, Earth observation, manned space missions, PRODEX

Interviewee**GIBSON, ROY***Roy Gibson***Interviewer****MATTHEW GODWIN****Date**

05/12/2007

Educated at Oxford University, the London School of Economics and the School of Oriental and African Studies in London. After a decade in the Colonial Administrative Service in Malaya (1948–58), he joined the Atomic Energy Authority in London until 1967. Appointed Deputy Director of ESTEC (1967–71) and ESRO Director of Administration (1971–74), he was the first ESA Director General until 1980 and the first Director General of the British National Space Centre (1985–87). Since then he has served as an aerospace consultant (EU/EC) and helped set up the European Environment Agency.

Main topics covered

Far East, UK atomic energy authority, ESRO, ESTEC, ESRIN, ESRANGE, ELDO, ESA; scientific cooperation: China, India, Ariane marketing, UK space policy, BNSC, Hotol

Interviewee**GOLAY, MARCEL***Marcel Golay***Interviewer****MANUELA GIOVANNINI****Date**

04/03/2008

He has held various positions at the University of Geneva (Astronomy and Astrophysics) and directed its observatory. His special interest lies in space photometry. He was a Swiss representative at COPERS and the ESRO Council, serving as Vice-President from 1964 to 1966, and later to ESO and ESA. He was a member of, and chaired, various academic societies and was the President of the National Commission of Space Research in Switzerland.

Main topics covered

Swiss research policy, COSPAR, CERN, COPERS, LAS (Large Astronomical Satellite), sounding balloons, ESO, ESA scientific missions, space exploration, small countries

Interviewee

GRAGE, HENRIK



Henrik Grage

Interviewer
NIELS EILSKOV
JENSEN

Date
02/05/2007

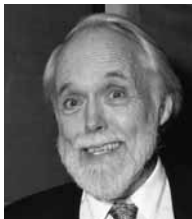
Educated in Law at the University of Copenhagen, he has held various positions in the Danish ministries of Education, Research, Science, Technology and Innovation, including special assignments relating to Denmark's involvement in European research organisations such as ESA, CERN, ESO, EMBL, COST, EUREKA, and EU space activities. From 1978 to 1987, he was a member of, and chaired, various ESA delegate bodies, including Council. He also chaired the European Southern Observatory Council (1996–99).

Main topics covered

ESRO crisis, industrial return; IPC, IRAG, Council chairs; ESA/EU Agreement, SMART-1, Danish space policy, Ørsted satellite

Interviewee

GUDMANDSEN, PREBEN



Preben Gudmandsen

Interviewer
NIELS EILSKOV
JENSEN

Date
24/04/2007

Educated at the Technical University of Denmark, he held various positions in technical centres and research institutes until he retired from the university in 1994. He became a Professor of Microwave Techniques at the TU Denmark in 1972. Employed by RS-Consult ApS, founded with two colleagues in 1985, he continued his work in microwave remote sensing (Greenland area). He has contributed to a number of projects/contracts with ESA and participated in various study groups since 1972, several of them being forerunners for ERS-1. He was the Danish delegate to ESA (1972–94) in various boards and working groups, including Council (1987–94).

Main topics covered

Microwave radiometry, Danish space and research policies, small countries, marketing of satellites, remote sensing, ERS, Spot, EARSeL, Ariane, ISS

Interviewee**HANIN, CHARLES***Charles Hanin***Interviewer****DAWINKA LAUREYS****Date**

28/02/2002

Received his doctorate in Law from the University of Luxembourg in 1936. After playing an important role in local politics, he was elected to the Belgian Parliament in 1958, and then to the Senate in 1965. In Belgium, Hanin held various portfolios, e.g. Minister of the Middle Classes (1968–72), of French Culture (1972–73), of the Interior (1974) and of Science Policy (1973–74). It was in this last capacity that he chaired the conclusive meeting of the European Space Conference on 31 July 1973 in Brussels, where he was mainly responsible for its success.

Main topics covered

European Space Conference chair, LIIS launcher, Marots, Spacelab, Belgian research policy

Interviewee**HESELTINE, MICHAEL***Michael Heseltine***Interviewer****MATTHEW GODWIN****Date**

22/11/2007

Lord Heseltine has been a Member of British Parliament since 1966. He has held various ministerial positions, including Minister of Aerospace and Shipping from 1972 to 1974, Secretary of State for Trade and Industry and President of the Board of Trade from 1992 to 1995. He was Deputy Prime Minister and First Secretary of State from 1995 to 1997.

Main topics covered

UK space policy, BNSC, Concorde, European Space Conference, Hotol spaceplane

Interviewee

ISERLAND, KLAUS (1927–2005)



Klaus Iserland

Interviewer
DAVID REDON

Date
11/03/2003

He was awarded an engineering sciences doctorate at the Swiss Federal Institute of Technology in Zurich and became a research assistant at its Aerodynamics Institute. He worked on anti-air/anti-tank missile development at Oerlikon Contraves AG until 1962. At ELDO, he was Deputy Director of the Europa programme and CSG Director until 1973. He then went back to private industry to join Dornier, where he was the company's representative in France as Director of Marketing Development. He became Deputy Director General of Arianespace for technical/commercial matters (1980) and international affairs (1986–92).

Main topics covered

Aerospace industry, Europa 1 and 2, launching site, SEP Vernon, CSG, ELDO crisis; space exploitation: Arianespace

Interviewee

KRAMER, GUY



Guy Kramer

Interviewer
DAVID REDON

Date
02/10/2003

Studied at the École nationale des ponts et chaussées and the Institut de Commerce International. His career spanned a variety of different posts: Director of Maritime/Tunnel Works (1952–55), Sainrapt et Brice Administrator in Australia (1956) and Director in Pakistan (until 1966), Director of CSG (until 1969), Administrator at the Société immobilière de Kourou, President of the Société Eau et Electricité de Guyane (1968–69), Deputy Foreign Affairs Director at Fougerolle (1970) and Director of Export at Heurtey Industrie.

Main topics covered

Career, CSG

Interviewee**ORYE, RAYMOND***Raymond Orye***Interviewer**

DAWINKA LAUREYS

Date

19/11/2002

Obtained an engineering degree (Royal Military Academy, Brussels). After a post-graduate course in Guided Weapons (Cranfield University), he held various positions in the Belgian Army. From 1963 onwards, he was in charge of programme planning at ELDO (Europa 1) and of project control on future launchers (Europa 3). From 1973 to 1996, he was Head of the Ariane Programme at ESRO/ESA. He actively participated in negotiations with the US and Russian governments on the 'Rules of the road' for launch service providers.

Main topics covered

Europa 1, 2, 3; CSG, ELDO crisis, Ariane programme management & marketing, Arianespace, TCI Affair, Ariane 4, 5; launch services: USA, USSR

Interviewee**POUNDS, KEN***Ken Pounds***Interviewer**

MATTHEW GODWIN

Date

13/12/2007

Has been involved with space physics, in collaboration with ESRO and ESA since the 1960s, working on sounding rockets, ESRO-2 and Exosat. From 1994 to 1998, he was Chief Executive of the UK Particle Physics and Astronomy Research Council. He then returned to the University of Leicester, to become Head of the Department of Physics and Astronomy. He was also President of the RAS and is a Fellow of the Royal Society. Emeritus Professor at Leicester since 2002, he is researching active galaxies primarily with ESA's XMM-Newton observatory.

Main topics covered

X-ray astronomy, space exploration, Ariel satellite, ESRO, Skylark launcher, COS, TD, Exosat, Helios, Horizon 2000, UK space and research policies

Interviewee

ROVSING, CHRISTIAN



Christian Rovsing

Interviewer
NIELS EILSKOV
JENSEN

Date
26/04/2007

He was a member of, and chaired, various advisory bodies, committees and boards (e.g. Danish Academy of Technical Sciences, Danish Space Board, Arianespace). He founded and co-owned high-tech companies (space, defence, biotech and telecommunications). Active in local and national politics since 1966, he eventually became a Member of the European Parliament (1989–2004 and 2007–09).

Main topics covered

Aerospace industry; space exploitation: Arianespace; European space policy, Aurora programme, GalileoSat

Interviewee

SCHNEITER, HANSPETER



Hanspeter Schneiter

Interviewer
STEPHAN
ZELLMAYER

Date
27/03/2008

Graduated in mechanical engineering in Zurich. He started his career at Brown Boveri (now ABB) in Baden. From 1960 to 2000, he held various positions in Contraves AG in Zurich, becoming Head of the Space Department in 1970 and Director of the Space Division at Oerlikon-Contraves AG (1981–96). He continued until 2000 as a Member of the Board of Contraves Space AG. He served as a Member of the Arianespace Board of Directors, initiated the ISSI Foundation and was President of its Board of Trustees for the first 13 years. He was the first ESA Industrial Ombudsman (2000–04).

Main topics covered

Aerospace industry, space exploitation, Arianespace, industrial return, Swiss space policy, Alpsat, manned space missions, space exploration

Interviewee**SILLARD, YVES***Yves Sillard***Interviewer**

DAVID REDON

Date

20/05/2003

Educated at the École Polytechnique and the École Nationale Supérieure d'Aéronautique. After having set up the French Space Centre at Kourou, Guiana, he became Director of Launchers at CNES in 1973 and subsequently Director General (1976–82). After working for the Centre National pour l'Exploitation des Océans, he chaired the Council of the Institut français de recherche pour l'exploitation de la mer (Ifremer, 1985–89) and served as the French national coordinator for EUREKA. Délégué Général pour l'Armement until 1993, he was then Chairman and CEO of the Défense-Conseil International (1994–97) and NATO Assistant Secretary General for Scientific Affairs (1998–2001).

Main topics covered

Military launching sites in Algeria, CNES, CSG, French space policy, Ariane, ELDO, Europa launching pad, Europa 2

Interviewee**VAN REETH, GEORGE (1924–2010)***George Van Reeth***Interviewer 1**

DAWINKA LAUREYS

Date

11–13/03/2002

Interviewer 2NATHALIE TINJOD,
RENÉ OOSTERLINCK**Date**

19–20/09/2008

Studied civil engineering and Law (doctorate, Catholic University of Louvain, 1952). Joining ESRO in 1964, he headed the Contracts Service at ESTEC, playing an important role in setting up industrial consortia. In 1972, he became Administrative Director of ELDO and later Acting Secretary General. As Director of Administration of ESA in Paris (1975–91), he has been involved in all aspects of space policy, notably international relations and industrial policy. After 27 years with ESA and its predecessors, he served as the first President of the International Space University (1992–94).

Main topics covered interviewer 1

NATO, ESRO, ESTEC, procurement & industrial return, ELDO, ESA programmes, etc.

Main topics covered interviewer 2

Entire career, including ISU

Interviewee

WAUTREQUIN, JACQUES



Jacques Wautrequin

Interviewer

DAWINKA LAUREYS

Date

22/03/2002

Doctor in Law (1955) and bachelor in applied economics (1956). After having been a lawyer and then financial analyst, he joined the Belgian Administration for Science Policy (SPPS) in 1960. In 1962–63, he was seconded to the OECD Directorate for Scientific Affairs. Back at SPPS, he was in charge of the Technology Service. From 1986–89, he was seconded to the European Commission (DG Telecom, Information Industry and Innovation). From 1989–98, he was Secretary General of SPPS and in this capacity led the Belgian delegation in the ESA Council.

Main topics covered

ESRO, ELDO, Belgian space and research policies, Telecom, Hermes, aerospace industry, industrial return, SPOT satellite

**→ PRESENTATION OF THE
ALEXANDRE KOYRÉ MEDAL
TO THE ESA HISTORY
PROJECT**



4.

Presentation of the Alexandre Koyré Medal to the ESA History Project¹

In 2009, the Alexandre Koyré Medal was awarded to the ESA History Project. The ceremony was held on 4 September 2009 at ESA Headquarters. Below are the speeches given by the guests of honour on the occasion.

4.1

Welcome remarks by Karlheinz Kreuzberg

Head of the Director General's Cabinet

Dear friends and distinguished guests,

First of all, I would like to welcome all of you to ESA Headquarters. My name is Karlheinz Kreuzberg, and I am the Head of the Director General's Cabinet. I have the pleasure together with our Director General to welcome you all this evening to this celebratory event.

This ceremony is a joint event hosted by the International Academy of the History of Science and ESA. Therefore, let me welcome its President, Professor Eberhard Knobloch, who came from Berlin today to be with us, and Professor Robert Halleux, who has come from Liège.



¹ Alexandre Koyré (29 August 1892 – 28 April 1964) was a French philosopher of Russian origin who wrote on the history and philosophy of science. The Alexandre Koyré Medal is awarded every two years by the International Academy of the History of Science in Paris, normally to a history scholar for his career contribution rather than for a particular achievement.

*The 2009 Alexandre
Koyré Medal*



It is a special pleasure for me to welcome my own Director General, Jean-Jacques Dordain, and one of his predecessors, Professor Reimar Lüst, and his wife Nina. Professor Lüst was the main driving force behind the ESA History Project at the beginning of the 1990s. I hope you are not completely dissatisfied with what you are seeing today, with what you are able to read and what we have put together.

We are also very pleased and honoured that George Van Reeth, former ESA Director of Administration, can be with us. I personally am very pleased that you could attend. I would just like to remind the audience that you celebrated your 85th birthday a couple of days ago. So congratulations!

I would also like to mention a few of our distinguished guests and former Directors of ESA: Roger Bonnet, who has always been a friend of the Agency and very supportive of the preparation of the event; Jörg Feustel-Büechl, who left Bavaria to spend one night here, a challenge in itself; Marius Le Fèvre; and not forgetting my predecessors Karl Reuter and Roger Elaerts and also Winfried Thoma.

The last people I would like to welcome are those who are directly linked to the ESA History Project: Professor John Krige, who is the mentor and was the Project Leader of the ESA History Project; and Professor Arturo Russo from the Institute of Physics and Related Technologies at the University of Palermo.

Finally, I also want to welcome the publisher, Monsieur Jean-Etienne Mittelmann, CEO of Beauchesne, who was very helpful in publishing the series of books dedicated to the history of national space programmes. One is still missing from the set, which will eventually number eight. It was a challenge I placed on you, a big challenge, when we started and time was a little short, but you together with Professor Halleux managed to bring out seven of the eight planned books.

I would also like to mention very briefly some of those we invited but who could not come for different reasons. I would like to start

with Mr Brado, who unfortunately for health reasons was unable to come. The same applies to Mr Dattner and Mr Orye. They asked me to give their best greetings to you. I also had a call from René Collette who is at Caltech in California where he is a visiting scientist. He reminded me that Professor Lüst was a visiting Professor for Aeronautics and Astrophysics at Caltech in 1962 before becoming Scientific Director of ESRO.

Before we start the programme, I would simply like to say that this event would not have been possible without the work and dedication of my colleagues. I would like to mention Nathalie Tinjod, Johann Oberlechner and Sabine de Bisschop, who did a great job of organising this event. My sincere thanks to all of them.

Professor Halleux,² can I please ask you to start with the introduction?

4.2

Introduction par Robert Halleux

Secrétaire perpétuel de l'Académie internationale d'histoire des sciences

*Monsieur le Directeur général,
Monsieur le Chef de Cabinet,
Monsieur le Président de l'Académie,
Mesdames, Messieurs,
Chers collègues,*

L'événement qui nous réunit aujourd'hui est très symbolique. C'est une rencontre entre ceux qui font la science de demain et ceux qui écrivent l'histoire de la science d'hier. Entre l'Agence spatiale européenne et l'Académie internationale d'histoire des sciences, il y a plus qu'un partenariat. Il y a, je dirais, une continuité, une complémentarité, puisque nous avons tous en charge la plus belle aventure de l'histoire humaine, la recherche de la vérité dans la nature.

Au nom de l'Académie internationale d'histoire des sciences, dont je suis actuellement le Secrétaire perpétuel faisant fonction, je voudrais remercier très chaleureusement l'Agence spatiale européenne et son équipe pour son accueil. Je voudrais aussi excuser notre Secrétaire perpétuel, Monsieur Emmanuel Poulle, qui est retenu par une grave maladie.

² Prof. Robert Halleux, Head of the Centre for History of Science and Technology, University of Liège, Belgium, was replacing Prof. Emmanuel Poulle as Perpetual Secretary.



L'Académie internationale d'histoire des sciences a 80 ans. C'est en 1928, à Paris, qu'un historien italien, Aldo Mieli, a rassemblé les principaux chefs de département d'Europe pour créer une sorte de convivium sapientium, de réunion d'hommes de bonne volonté avec pour seul critère l'excellence. Cette excellence transparait dans le recrutement. Nous avons un peu plus de 320 membres qui sont tous, dans le monde entier, sous toutes les latitudes, des savants distingués. Cette recherche de l'excellence, nous la poussons aussi dans nos publications, la revue Les Archives Internationales et nos collections de travaux « Explorations », dont vous avez un exemple ici, et De Diversis Artibus, qui est publié chez Brepols, Explorations chez Beauchesne avec Monsieur Mittelmann. Bref, l'excellence dans la

recherche est ce qui nous réunit ici les uns et les autres. J'ai eu la chance, à un autre titre, comme professeur à l'Université de Liège, de participer à ce projet avec une de mes collaboratrices et j'ai été frappé à la fois par la cordialité et par la haute exigence du travail qui y est fait.

Je voudrais remercier chacun d'entre vous ici pour cela, mais je voudrais surtout mettre à l'honneur deux personnes qui ont été pour nous à la fois des initiateurs, des pères spirituels et des conseillers de chaque instant : le Professeur Reimar Lüst et Monsieur George Van Reeth. Je me souviens, Monsieur Van Reeth, que c'est vous qui êtes venu nous chercher en Belgique pour commencer avec vous cette aventure, qui aujourd'hui, est couronnée par l'Académie. C'est pourquoi maintenant, pour parler davantage de ce prix et pour parler de tous les mérites de cette belle entreprise, je cède la parole à notre Président, le Professeur Eberhard Knobloch.

4.3

Laudatio by Eberhard Knobloch

President of the International Academy of the History of Science

Dear Director General,
Dear members of the International Academy of the History of Science,
Ladies and Gentlemen,

It is a great honour and pleasure for me to address you in my capacity as President of the International Academy of the History of Science, which was established 80 years ago. Today it comprises about 350 corresponding and effective members, historians of science and technology from all over the world.

Every two years the Council of the Academy attributes the Alexandre Koyré Medal to scholars in order to reward outstanding publications in the history of science and technology. It is named after the famous Franco-Russian philosopher of science, Alexandre Koyré, who was born in Taganrog, Russia, and died in Paris. The Parisian address of our Academy goes back to the Academy's official registration in France. We are a non-profit organisation.

This medal plays a crucial role in the world of the history of science and technology. In 2007, the Alexandre Koyré Medal was awarded to

the distinguished Turkish historian of science Ekmeleddin İhsanoğlu. In 2009, the Alexandre Koyré Medal has been awarded to the 'History Project' of the European Space Agency.

For the time being, the Academy has no elected Permanent Secretary who normally delivers the eulogy. For that reason I myself shall read out the eulogy. Let me now switch to French.

*Monsieur le Directeur général,
Chers membres de l'Académie internationale d'histoire des sciences,
Mesdames, Messieurs,*

Depuis 1968, l'Académie internationale d'histoire des sciences décerne une distinction qui passe pour la plus haute dans notre discipline. C'est la médaille Alexandre Koyré, qui a reçu



le nom de l'illustre auteur de From the Closed World to the Infinite Universe.

Cette médaille honore, non pas un livre, mais une œuvre qui a marqué durablement notre discipline. Cette œuvre peut être individuelle ou collective. C'est ainsi que la médaille a été remise à des savants éminents, parvenus au sommet de leur carrière : Derek Thomas Whiteside, Marshall Clagett, John North, René Taton, William Shea, John Heilbron, Roshdi Rashed et, dernièrement, Ekmeleddin İhsanoğlu.

Mais cette œuvre peut aussi être collective comme le Dictionary of Scientific Biography dirigé par Charles C. Gillispie, ou la Storia della Scienza de l'Istituto della Enciclopedia Italiana, sous la direction de Vincenzo Cappelletti. C'est le cas aujourd'hui du projet « Histoire de l'Agence spatiale européenne » (« ESA History Project »).

Le choix s'est imposé à l'Académie pour de multiples raisons.

Le XXe siècle a connu plus de révolutions scientifiques que tous les autres réunis. Paradoxalement, les acteurs de ces grandes mutations n'en ont pas gardé mémoire et les historiens commencent seulement à s'y intéresser. L'Agence spatiale européenne est une exception remarquable et a fait un travail de pionnier.

L'Agence s'est souciée de préserver ses archives, qui sont parmi les mieux organisées au monde, et elle les met généreusement à la disposition des chercheurs ; elle a lancé une vaste campagne d'archives orales en interrogeant les grands acteurs de son histoire ; elle a enfin créé sa propre équipe historique, ce qui est exceptionnel.

Sous la direction du Professeur John Krige, membre de notre Académie, des chercheurs d'Europe et d'Amérique ont réalisé de 2000 à 2009 deux importants volumes sur l'histoire de l'Agence, quarante monographies sur des questions particulières et huit volumes sur les contributions nationales à la recherche spatiale européenne : Royaume-Uni, Allemagne, Italie, Espagne, Belgique, Suisse, Autriche, Finlande, en espérant bientôt un volume sur la France. Tous ces travaux sont de haute qualité scientifique.

Je me permets en effet d'attirer votre attention sur deux caractéristiques de cette entreprise, qui sont de la plus haute importance aux yeux de notre Académie. La première est son interdisciplinarité. C'est une histoire « ouverte et décloisonnée » à laquelle ont collaboré historiens des sciences, des techniques, de l'économie, des politiques scientifiques. Elle n'intéresse pas seulement les spécialistes, mais chaque Européen concerné par les enjeux du progrès scientifique. La deuxième est sa modernité. Il s'agit d'une histoire des sciences résolument contemporaine, ouverte sur le présent. Or, on reproche souvent aux historiens d'être passésistes, de privilégier les anciennes périodes alors que le centre de gravité de notre discipline s'est déplacé

vers le XXe siècle. En honorant cette œuvre, notre Académie encourage des recherches innovantes.

Monsieur le Directeur général, en vous remettant cette médaille, notre Académie fait résolument un choix d'avenir. Au moment où Koyré écrivait sur Copernic, Kepler et Galilée, les premières fusées affrontaient l'espace. En honorant le projet « Histoire de l'Agence spatiale européenne », ce sont les successeurs d'Alexandre Koyré que nous honorons, et je forme le vœu que la collaboration entre nos deux institutions se développe ad multos annos.

I would now like to switch back to English:

Dear Director General,

We have just heard the reasons why in 2009 the Alexandre Koyré Medal has been awarded to the 'History Project' of the European Space Agency. The medal bears the inscription *Itinerarium mentis ad veritatem*, or "Journey of the mind to truth". The colleagues involved in this project have written the history of *l'Europe spatiale*.

You represent these colleagues in your capacity as Director General of this Agency. Therefore, I would like to now present you with the medal and congratulate you on this eminent success.



*Handover of medal,
Jean-Jacques Dordain
(ESA DG) & Eberhard
Knobloch (IAHS
President)*

Remarks by Jean-Jacques Dordain

ESA Director General

Dear friends,

First of all I would like to say that I am very honoured to receive this medal. I was told that I am receiving this medal because I am the Director General of ESA. When Monsieur Lüst is somewhere with me, I am not the Director General. He is my Director General. And this is forever. So this is just because today I am the one who is DG but I think that you deserve to get this medal much more than I. Compared to everyone in this room I am certainly the one who has the least credit to get that medal, because I am not part of the history project and I am not yet part of the history of ESA. So I deserve no credit; but I received that medal and I can tell you that I am very happy for ESA, for the project team and for all of us. So Professor Knobloch, thank you very much for your words which go directly to my heart. I really appreciate the ESA Project Team receiving this award. And I would also like to thank Professor Halleux for his introduction.

ESA History Project: I would like to say a few words on these three words.

Project. First of all, ESA is an organisation where we work only on projects. I think it was good to choose the name project. And as



for any project at ESA, the origins are with very few individuals. And obviously among these individuals there are Professor Lüst and George Van Reeth. You cannot separate Lüst and Van Reeth anyway. When you are speaking of one you have to speak of the other. So you were the two at the origin. And I must say that speaking of a history project in 1990 when ESA was 15 years old was visionary, because to start the memories of someone when he is 15 years old, you must have a vision. But as usual, Professor Lüst and George, you had a vision, and today we have the result of your vision with this medal. Obviously, Professor Lüst, you were Chairman of the History Advisory Committee up to 1999 and after that it

was Karl Reuter and now it is Karlheinz Kreuzberg. So there has been a continuous line of ESA colleagues taking responsibility for this and you have ensured the continuity of that vision. And without the follow-on and the successive Chairs we would not be here today. So these are the ones who were originators of the project.

But obviously the key part of the project team is with the historians because without historians there is no history. They are Professor John Krige, the project leader, but also Professors Arturo Russo, Michelangelo De Maria and Lorenza Sebesta, who have written the two books on ESA's history. And now there is Professor Halleux who is the driving force behind the project for writing the history of the space programmes of our Member States. We were speaking of that a couple of minutes ago. We already have eight books on the history of space in our Member States. And finally I would not like to forget the publisher Beauchesne and I think the CEO, Monsieur Mittelman, is with us today. And I would also like to thank him, because when you are writing a book, how you publish it is very important. As you know I am the only one in this room who does not read anything on a computer, so I need books. I cannot read anything without books. Thank you for these books.

The second word is *History*. In space the borderline between the past, the present and the future is not very well defined. Just take two examples. The Columbus laboratory was named Columbus because it was supposed to be launched in 1992; it was actually launched in 2008, meaning that there are some margins in the line between the present and the past. But there is also another example, which is Huygens. As I have said many times, Huygens was decided under Lüst, developed under Luton, launched under Rodotà, and I myself got the reward for landing on Titan, but I was again the only one not to deserve any credit for Huygens. So just to say that space activities are more a continuum where the cooperation among generations is very important. We speak very often of cooperation between partners in space, but cooperation among generations is also very important, and the transfer of experience, the transfer of lessons learned from one generation to the following one, is very important. Thanks to Roger Bonnet who has written a book on how we shall be in 1000 centuries from now, we know now where we shall be in 1000 centuries.³ With history books we know where we are. So the present is just a bridging phase between the past and the future. I am glad that today we are together with a lot of colleagues who have not only written the history of ESA, but who *are* ESA and

³ Surviving 1,000 Centuries, Can We Do It? by Roger-Maurice Bonnet and Lodewijk Woltjer, Springer Berlin, in association with Praxis, Chichester, UK, 2008, 442 pp.

who are part of the history, which means that you are present in our daily lives because of what you developed when you were at ESA. We are still at the start of the exploitation of Columbus, meaning that even those who developed Columbus and left ESA are still very present in our daily lives.

The third word is *ESA*. ESA is a fantastic organisation – I think we are all convinced of that – which has been built up through several tens of years but which is ready for the future. ESA has evolved a lot. We have more and more activities. We are very present in more and more applications programmes. I must say we are not making programmes just for scientists and engineers any more. We are very present in a lot of applications like meteorology, climate change, energy, telecommunications and so on, meaning that no one in Europe can live without ESA, even if most of the citizens do not realise it; but without ESA life in Europe would be very different. We have more and more Member States: we are now 18. You see the number of flags, and this is just a start because last year the Czech Republic became the first of the new EU Member States to join ESA. We are already negotiating with Hungary and Romania, which will become ESA Member States in the next few years. I am convinced that in five years from now we will have 25 Member States. And this is the reason we are looking at how to reorganise the building. We may build a mezzanine but it will be very difficult to know which Member States will be on the ground floor and which on the mezzanine. So I think it is better to enlarge the room. We have more and more partners; we obviously have the European Union, but we are also connected with different sectors. We have developed public–private partnerships – real ones by the way, not ones that just look like PPPs. We have built real PPPs: just to name one, Alphasat. The Alphasat project is a telecommunication satellite where Inmarsat is investing 450 million euros in the development of the satellite and we selected Inmarsat in free competition. I am very proud that ESA has been able to do that.

ESA is evolving a lot but the spirit of ESA is still the same. I have been at ESA 23 years and the spirit has not changed because the roots of ESA are the same: expertise and diversity. And expertise and diversity are the best way to qualify the staff of ESA. As for the objective of ESA, it is still the same, namely to build up the future.

And I would like to finish on the future. When speaking of history we cannot do so without speaking of the future. I shall quote Antoine de Saint-Exupéry, who, speaking of the future, said our task is not to predict it but to make it possible. This is what we are doing at ESA. We are not spending time on predicting the future, we are spending time on making the future possible.

Thank you very much.

Speech by Reimar Lüst

Max-Planck-Institut für Meteorologie, Hamburg

I am most thankful to the DG for arranging this event to honour the historians responsible for the ESA History Project. I am extremely pleased that the International Academy of the History of Science has recognised the work of the ESA History Project so highly by awarding it the 2009 Alexandre Koyré Medal.

Just 20 years ago, the idea of writing an independent authoritative history of ESA and its precursor organisations, ESRO and ELDO, was presented to me here in this building when I was DG of ESA. I had no difficulty reacting very positively to that approach.

In connection with this decision, I would like to quote a proverb of the German poet Johann Wolfgang von Goethe: “Only he who cares about the present will write about the past.”

Indeed one could quite rightly interpret my motivation in giving the green light to this ambitious project in that way. I am deeply impressed by the outcome of this great historical endeavour. It includes not only the two volumes *A History of the European Space Agency 1958–1987* by John Krige and Arturo Russo and the precursor of these two volumes entitled *Europe in Space 1960–1973*. But their

immense efforts have stimulated quite a number of additional interesting publications about the space activities of ESA and those in the European States. They have been published in books and in articles, and I regard them all as part of the ESA History Project, whether it be the book by Roger Bonnet and Vittorio Manno, *International Cooperation in Space*, or the one by the late Jan Stiernstedt, *Sweden in Space*.

For me, it was fascinating to follow the development of the work of the historians in my capacity as Chairman of the Advisory Committee over nine years. The last meeting of the Committee took place in March 1999, 10 years after the positive decision in 1989. Here I want to give particular mention and thanks to Karl-Egon Reuter, a driving force behind this



project with Johann Oberlechner in the background, and must not forget to mention Peter Creola and George Van Reeth as ESA pioneers.

Reviewing the impact of this historical project, I am reminded of the Danish philosopher Søren Kierkegaard who stated “To understand life, look back. To live life, look forward.”

Of course, I have now reached an age where the first part of this statement is more apt than the second, and I can read this impressive historical work and reflect on my own involvement in European space activities. For me it all started 49 years ago on 29 April 1960 at the first planning meeting for ESRO at The Royal Society in London. A year later on 13 and 14 March 1961, at the first meeting of the Council of COPERS, I was elected as a Coordinating Secretary for the scientific programme. In June 1962, the Member States accepted the ESRO Convention, and I was appointed as the first Scientific Director of ESRO. On 1 September 1984, 25 years ago, I started my duties as the DG of ESA.

I thank wholeheartedly the DG, you Jean-Jacques, for inviting not only Nina and me to this ceremony, but also those who helped me during my six years as DG. I was very lucky that you all were willing to support me during this period.

During those six years, I had to take many decisions, not all of which might have been right. But certainly in 1986 one was right and important for ESA, namely when I signed the contract for Jean-Jacques Dordain to become a staff member of ESA.

I congratulate him for what he has done so far and wish him success in the years to come.

Thank you.

4.6

Talk by John Krige

Lead Historian on the ESA History Project

It gives me great pleasure to say a few words on this distinguished occasion on behalf of all the historians who participated in the core ESA history project: myself, Arturo Russo, here present, Mimmo De Maria and Lorenza Sebesta. It is astonishing to think that the seeds of this project were sown 20 years ago, almost to the day. Russo and I were both at the International Congress for the History of Science that was held in Hamburg in 1989. While there, we decided to contact Professor Lüst and to suggest that ESA may like to support a history of the Agency. Russo, who had already communicated with Lüst, would draw on his extensive knowledge of the history of space science. I would bring my experience in writing the history of CERN to the table.



De Maria would, well, be De Maria. Russo had worked with him for many years, and Mimmo was particularly interested in studying ELDO and the emergence of Ariane from the ashes of Europa.

We started in the garage underneath this building. There, scattered in disarray, and falling out of metal cupboards, were hundreds of files and thousands of documents, the vast paper trail that constituted the history of ESRO, ELDO and ESA. This primary source material would provide the raw material out of which our narrative would be constructed and our analyses developed. Of course, we would also exploit the collective memory of key actors through interviews. But we wanted to do more, to dig deep into the archival material and produce a study that would not shy away

from controversy. A study that would expose the conflicts and the compromises that made up the extraordinary adventure that was the building of a collaborative European space effort. We wanted to write a scholarly history, not simply a celebratory one. The award of the Alexandre Koyré Medal is both a tribute to Professor Lüst's foresight and a recognition by our peers that we have achieved our goals.

I cannot exaggerate the scope of the support that ESA gave us, both moral and financial. It did not simply keep me in a job for five years, and support as consultants Russo, De Maria – until his midlife crisis overwhelmed him – and then Sebesta. With the help of Eva Vermeer and then Nathalie Tinjod, the Agency placed the documentary collection that was tumbling out of those cupboards below into the professional hands of Jean-Marie Palayret and his team at the Historical Archives of the European Union in Florence. This was an essential resource without which the work would simply not have been possible. ESA also supported financially and politically the dissemination of the results among the broader European space community. Russo set the trend by organising a conference on space science in Palermo in 1992. Then, along with Gabriel Lafferranderie, I organised a meeting in Florence on the implementation of the ESA Convention in 1993. There followed high-level conferences in Munich in 1995 and in London in 1998, as well as workshops on the history

of Spacelab at ESTEC in 1997. And there is still more, of course. The core project spawned support by ESA for many national histories that were commissioned under the able guidance of Karl Reuter. Bruce Battrick at ESTEC was incredibly efficient in publishing all of this work. More recently, thanks to the efforts of Professor Halleux, some of it has been beautifully presented in the series published by Beauchesne. The ESA History Project is this vast interconnected network of people and paper, and this prodigious output.

And it was fun! Everyone has their stories to tell, and I shall take a moment to tell my favourite. It was around 1997, and Karl Reuter was becoming just a little impatient with the time it was taking to complete the main study. He was patently not persuaded by the team's arguments at the annual project review. And then Svante Lindqvist asked to speak. Lindqvist was one of the external advisers to the programme. Today he is the Director of the Nobel Museum in Stockholm. "Mr Reuter," said Lindqvist, "you should not be angry and frustrated that the team is late, you should be delighted. This proves that they are taking their job seriously, and that their work is particularly solid." No one was ready for the argument that later and more expensive is better. No one quite knew how to respond to this Scandinavian logic that turned Dan Goldin's mantra of faster, better, cheaper on its head. Even Karl was lost for words for a moment... before uttering that sceptical "Hmm" of his, and adjourning the meeting for lunch, where we were entertained as usual by the late Michel Bignier.

I conclude. The Alexandre Koyré Medal awarded to ESA suggests that Lindqvist was right. The citation says that the History Project as a whole has "completely revitalised the scientific, technological, industrial, and political history of the conquest of space, and of European cooperation." I should add that it also touched, and even changed, the lives of everyone who was associated with it, especially the core historians. Thank you Professor Lüst. Thank you ESA.

Presentation of the Alexandre Koyré Medal to the ESA History Project



Guests of honor attending the medal ceremony



George Van Reeth (former Director of Administration) & Jacques Durand (former Head of Ariane 5 programme)



Karlheinz Kreuzberg (DG's Head of Cabinet), Jörg Feustel-Büechl (former Director of Manned Spaceflight and Microgravity), Nina Lüst



Jean-Jacques Dordain, Karlheinz Kreuzberg, Eberhard Knobloch



Christian Lardier (Air & Cosmos), Johann Oberlechner (ESA History Project)

The ESA History Project



Jean-Jacques Dordain, Reimar Lüst



George Van Reeth, René Oosterlinck (ESA Director of the Galileo Programme and Navigation-related Activities), Reimar Lüst



Karlheinz Kreuzberg, Nina Lüst



Jean-Jacques Dordain, Reimar Lüst, Roger Bonnet



Karl-Egon Reuter (former Head of Cabinet), John Krige



Roger Bonnet, Marlene Bureau (former ESA staff member), Arturo Russo

**→ ANNEX: BIBLIOGRAPHY
OF THE ESA HISTORY
PROJECT**



SP-1235

A History of the European Space Agency 1958 - 1987



SP-1235

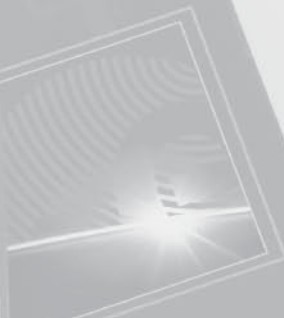
A History of the European Space Agency 1958 - 1987



Volume I
The story of ESRO and ELDO
1958 - 1973

J. Kelge and A. Russo

European Space Agency
Agence spatiale européenne



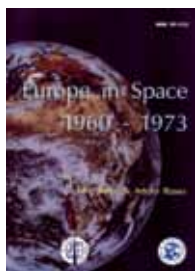
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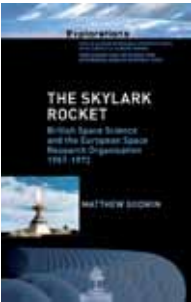
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→ **ACRONYMS**



TO PREPARE FOR
THE 21ST CENTURY
25 YEARS OF EUROPEAN
COOPERATION IN SPACE

1944
1964
1980

25 ANS D
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ACRONYMS

ARTA	Ariane Research and Technology Accompaniment
ATV	Automated Transfer Vehicle
CDTI	<i>Centro para el Desarrollo Tecnológico Industrial</i> (Spain)
CEPT	<i>Conférence Européenne des Postes et Télécommunications</i>
CERN	<i>Centre européen pour la recherche nucléaire</i>
CETS	<i>Conférence européenne des télécommunications par satellites</i>
CNES	<i>Centre National d'Etudes Spatiales</i> , French national space agency
COF	Columbus Orbital Facility
CONIE	<i>Comisión Nacional de Investigación del Espacio</i> (Spain)
COPERS	<i>Commission préparatoire européenne de recherche spatiale</i>
COSPAR	Committee on Space Research
CTV	Crew Transport Vehicle
EADS	European Aeronautic, Defence and Space Company
EBU	European Broadcasting Union
ECS	European Communications Satellite
ELDO	European Launcher Development Organisation
ELIPS	European Programme for Life and Physical Sciences
EOEP	Earth Observation Envelope Programme
ESA	European Space Agency
ESAC	European Space Astronomy Centre (ESA, Villanueva de la Cañada, Spain)
ESC	European Space Conference
ESDAC	European Space Data Centre
ESF	European Science Foundation
ESLAB	European Space Laboratory
ESOC	European Space Operations Centre (ESA, Darmstadt, Germany)
ESRANGE	European Sounding rocket Range
ESRIN	European Space Research Institute (ESA, Frascati, Italy)
ESRO	European Space Research Organisation
ESTEC	European Space Research Technology Centre (ESA, Noordwijk, the Netherlands)
EUTELSAT	European Telecommunications Satellite Organisation
GEERS	<i>Groupe d'Études Européen pour la Recherche Spatiale</i>
GMES	Global Monitoring for Environment and Security
HELOS	Highly Eccentric Lunar Occultation Satellite
IAF	International Astronautical Federation
IAC	International Astronautical Congress
IACG	Inter-Agency Consultative Group
IFHE	<i>Institut Français d'Histoire de l'Espace</i>
INSA	<i>Ingenería y Servicios Aeroespaciales</i>
INTA	<i>Instituto Nacional de Técnica Aeroespacial</i>
ISEE	International Sun-Earth Explorer
ISS	International Space Station
NASA	National Aeronautics and Space Administration (US)

OTS	Orbital Test Satellite
PTT	Post, Telephone and Telegraph administration
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space



CONTACT

ESA HQ

France
+33 1 53 69 76 54

ESTEC

The Netherlands
+31 71 565 6565

ESOC

Germany
+49 6151 900

ESRIN

Italy
+39 0694 1801

ESAC

Spain
+34 91 813 1100

EAC

Germany
+49 2203 60010