

The European Space Agency and the European Union: The Next Step on the Road to the Stars

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Abstract

Given the outlook, the main questions considered in this article are whether a European position on a genuine common space policy is developing. If so, why is this happening now?; and what kind of potentials do these developments hold for the European integration process as a whole? This article will approach these questions through an analysis of past European collaboration in space affairs. It will describe the recent process of closer involvement between European Space Agency (ESA) and the European Union (EU). It will identify the motivations underlying this process. It will also try to gauge the strategic potential of an intensification of the coordination of national space efforts in ESA and the involvement of the EU. In the conclusion, the ever closer relationship between the EU and ESA will be considered against the larger picture of European politics and the ongoing process of European integration

Keywords

ESA; EU; Institutions; Integration

IN THE IMMEDIATE AFTERMATH OF THE SECOND WORLD WAR IT WAS CLEAR THAT NO continental European state could seriously contemplate the development of a world-leading space programme. It was thought that only Britain had the wherewithal to build a successful space programme, because Britain had the technology, scientists, and access to materials. But by the 1960's, France, not Britain, was leading Europe in space navigation and research (Gaubert 2009: 38). At first, most experts were inclined to ignore the French efforts, overwhelmingly overshadowed by the work of America's NASA but also because of the flavour of propaganda from Gaullist aspirations to French *grandeur*. While the process of European economic integration had enjoyed spectacular success since the 1950s (see Camps 1964; Moravcsik 1998; Hoerber 2006a), cooperation in the field of space navigation, satellites, research, and exploration lagged far behind and was late to develop, despite the fact that space fitted perfectly with Jean Monnet's definition of an ideal area for the advancement of European integration, *i.e.* too big for individual nation states (see Gaubert 2009: 41, 44) and a virgin field of politics, comparable with nuclear research under Euratom which he pushed strongly (Hahn 1958: 1002; Gerbet 1999 : 173). After many false starts, ten European states¹ eventually agreed to the creation of the European Space Agency (ESA) in 1975, to cooperate in the field of space, a membership which has now expanded

¹ Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom, were the founding members of ESA.

I thank Harrison Carter for the preliminary research for this article.

to 17, plus Canada.² The fact that ESA membership also includes non-European Union (EU) states, such as Switzerland, or even extra-European states, such as Canada, highlights significant differences between ESA and the EU, but these are by no means only a matter of membership. There are also major differences in the rules and procedures which make up the institutional soul of both organisations. ESA is an archetypical intergovernmental organisation of the conventional kind, with the usual features such as a national veto, exclusively national funding and the controversial but inevitable concept of *juste retour* under which the majority of national funding contributions are given back to space companies of the same country (see Gaubert 2009: 43). There is no trace of supranational procedures such as direct democratic legitimisation through an elected parliament, 'own resources' as the EU has, or qualified majority voting in the governing Council. ESA was founded as an independent institution entirely separate from the European Communities, so the fact that there is now close cooperation with the EU is clearly significant and worthy of investigation. Recent developments in institutional collaboration and coordination have been described by former German Minister for Research and Education, Edelgard Bulmahn (until 2005), as "...dovetailing ESA into EU policy..." (FRG 2001)³ This seems to foreshadow, for the twenty-first century, the development of a common European position on space policy.

Research Questions and Method

Given the outlook, the main questions considered in this article are whether a common European position on space policy is developing. If so, why is this happening now? And what kind of potentials do these developments hold for the European integration process as a whole? This article will approach these questions through an analysis of past European collaboration in space affairs. It will describe the recent process of closer involvement between ESA and the EU, and it will identify the motivations underlying this process. It will also try to gauge the strategic potential of an intensification of the coordination of national space efforts in ESA and the involvement of the EU. In the conclusion the ever closer relationship between the EU and ESA will be considered against the larger picture of European politics and the ongoing process of European integration.

Sources and Literature

Apart from primary sources from ESA, and European Commission and national Government documents, there is limited literature on the European space effort. One finds cursory references in books such as M. Telò, *Europe a Civilian Power?* (2006), or in connection with security issues such as Western European Union (WEU) satellites, e.g. Trevor C. Salmon & Alistair J.K. Shepard, *Towards A European Army – A Military Power in the Making?* (2003), Wade Jacoby, *The Enlargement of the European Union and NATO – Ordering from the Menu in Central Europe* (2004), or Romain Yakemtchouk, *La Politique Étrangère de l'Union Européenne* (2005), but none offers a structured analysis of the European space effort. Furthermore, they hardly go beyond the empirical analysis of a specific field of interest, mainly that of security. Hence, most current literature on European integration in connection with space is confined to an evaluation of whether more or less of the same, e.g. security, would favour or inhibit the European integration process, instead of making a serious attempt to develop ideas which could inform the integration process with a renewed sense of purpose and direction. The analysis of space exploration in this paper is

² Austria, Finland, Greece, Ireland, Luxembourg, Norway, and Portugal joined later. Since [January 1, 1979](#), [Canada](#) has the special status of ESA 'cooperating state'.

³Original: "In der Einbettung der ESA in die EU-Politik wird ein Kernelement die Institutionalisierung der Zusammenarbeit zwischen ESA und EU sein, die bislang rechtlich nicht verzahnt waren." (translation by author).

an attempt – although by no means the only possibility – to promote the innovative idea of a European Space Strategy in a structured way as a progressive tool to foster European integration.

Examples of Collaboration

Since its inception, the European Space Agency has participated in numerous projects, missions and research programmes. Access to space is an obvious prerequisite for any space programme (Gaubert 2009: 42), and therefore the first major ESA project was the launch of a carrier rocket, Ariane, alongside other pioneering projects such as Meteosat (a weather satellite), ECS (a telecommunication satellite) and MARECS (a maritime communication satellite) (Harvey 2003: 169). The first Ariane launch took place on 15 December 1979, from the launch pad at Kourou in French Guiana (Harvey 2003: 169). This venture established the European gateway to space and broke the virtual monopoly enjoyed by the Americans on commercial launches. In 1992, the launch pad was upgraded to launch the redesigned Ariane 5 (Harvey 2003: 190). This upgrade enables ESA to conduct launches of heavier payloads, like Envisat - an earth resources satellite which was to observe the environment from space. The overall objective was to establish a commercial involvement in the Ariane programme and gradually hand over utility and control to commercial users, which has been successfully completed (FRG 2001: 2). In recent years ESA has also developed the Vega launcher, which is a smaller and more economic carrier, suitable for commercial applications in space. In connection with the other major European space projects, this launcher and future Ariane launches will feature Galileo positioning data, a breakthrough in mission management and control. Galileo will provide another source of information for rocket guidance, navigation and control, thus increasing the security and reliability of rocket launches. There are also concepts for reusable launchers, which would greatly reduce the cost of launching satellites and spacecraft. Both developments are steps towards the commercialisation of space technology, which is seen by the EC Commission as essential for the expansion of the European space sector (ESA 2004b: 1).

Another major ESA project was Envisat (Harvey 2003: 240). Envisat is a good example of European engagement in earth observation – one of the most important fields of European space investment (FRG 2001: 3). It was equipped with several devices such as (1) MERIS, which observes the so-called ocean colour, by means of solar radiation reflected by the (open and coastal) ocean surface; (2) MIPAS, which monitored chemical changes in the atmosphere; (3) ASAR, designed to scan the oceans at night and through cloud; (4) GOMOS, which is to monitor ozone depletion; (5) RA-2 to measure the ocean floor, waves, ice and polar sheets; (6) MWR to measure the humidity of the atmosphere; (7) LRR to gauge the distance between the Earth and the satellite; (8) SCIAMACHY to observe pollution in the atmosphere; (9) AATSR to measure sea temperatures; and (10) DORIS to measure distances (Harvey 2009: 242). The mass of data returned by Envisat's suite of 10 instruments now provides scientists with a global picture of our environment and is helping to meet the initial needs of the Global Monitoring for Environment and Security (GMES) initiative, pending the commissioning of the more sophisticated Sentinel satellites. Hence, earth observation is one of the pillars of the overall strategy of establishing Europe as an information power with first-hand access to primary data about our planet.

In addition, a major project undertaken was the launch of Galileo, founded in July 2003. This has been hailed as marking the dawn of a new era in satellite navigation (Amos 2005), which will provide a network of precise timing and location service, in competition with the American GPS system and the Russian GLONASS system, a lesser competitor. As far back as the early 1990s, the EU authorities agreed that Europe must have its own global navigation system. The decision to build one was taken in similar spirit to decisions taken

in the 1970s to embark on other well-known European endeavours, such as the Ariane launcher. The EC and the European Space Agency joined forces to develop Galileo as an independent programme under civilian control which will be guaranteed to operate at all times (see ESA website for Galileo). Thirty satellites should be ready by 2013. This is the most important joint venture between ESA and the EU, and the first of its kind (FRG 2001: 2). It has attracted major attention from the public and on the international stage not just because it is considered to be the most important technology project Europe has, but also because of its political ramifications. Because of the intense collaboration between ESA and the EU, Galileo can truly be seen as a pan-European project with a common purpose. This is yet another indication that a European Space Policy – in which Galileo and Global Monitoring for Environment and Security (GMES)⁴ are major pillars (see ESA 2005a; Hoerber 2006b: 19-28) – is now acquiring a definite structure.

Finally, the International Space Station (ISS) was built with substantial European participation. As with Ariane, this project is at a stage where commercial use of facilities has become feasible and is, indeed, highly desirable (FRG 2001: 3). The commercialisation of space technology is clear evidence that European space endeavours are reaching maturity. Such commercial use of space should give demand for space services another boost, and is hence another reason for the increasing importance of space.

These very substantial space projects also mark Europe's accession to the status of major player on the international space scene. The ESA budget has been around 3 billion euros, compared with 36 billion euros for the USA, and 2 billion euros for Japan (Harvey 2003: 349; Gaubert 2009: 40; ESA 2003: 25; ESA 2004a: 33-4). Domestically, ESA directly employs around 33,000 people, while providing work indirectly for a further 250,000 individuals (Harvey 2003: 349). Hence, Europe's growing role in the space world also generates multiplier economic benefits at home.

Well publicised programmes such as Mars Express and Huygens have also increased public awareness of European space engagement. The political momentum for further cooperation and advance can clearly be felt. Similar impulses can be expected from the European Space Exploration programme Aurora. The political repercussions are considerable, as currently reflected in the changes under discussion for the institutional structure in ESA and the EU.

Different history, common purpose in the future?

The background of "different history, common purpose" was described with much insight in the Council Resolution on a European Space Strategy in November 2000 (EC and ESA/C-M/CXL VIII/Res. I; see Dunk 2003, 83). It recognised that ESA was created in 1975 so that those European states with an interest in space could combine their resources to form a well respected space programme. In ESA, with its headquarters based in Paris, an organisation was created which could provide more structure and better focus than exclusively national projects (Crawford 1990: 191). In addition, after a few bad experiences dealing with NASA, due in most cases to the frequent changes in US policies on technology sharing and trade, many European states wanted to work in a reliable European space organisation, rather than to remain dependent on United States assistance (Crawford 1990: 191). Here is, indeed, one historical parallel between ESA and the EU – the desire to reduce dependence on America, albeit cooperation between the EU/ESA and US institutions is common ground between Western liberal democracies and

⁴ For GMES the Frascati agreement provides for ESA-EU cooperation in earth observation, signed 26 October, 2005.

allies (for ESA-US cooperation see ESA 2003: 19), so that actual competition in the field of space policy is rather rare.

Although ESA is not part of the EU, yet the two organizations maintain close relations. ESA and the EU endeavour to cooperate as much as possible to ensure Europe's access to space and cutting-edge research in the fields of satellites, communications, environmental monitoring, and space technology. 2003 was a decisive year in achieving this goal. In January, the European Research Commissioner, Philippe Busquin, introduced a Green Paper on a European Space Policy (Gaubert 2009: 42), aimed at launching the debate on Europe's space policy with all players, *i.e.* national and international organisations, the European space industry, future users and the scientific community. Particularly for Europe's citizens, the Green Paper was also designed to stimulate interest in European space engagement, which is an indication that European space affairs have achieved a prominence in government policies such that in the near future a more direct democratic mandate might be required than ESA can provide. The engagement of the EU parliament seems to be the obvious choice – with direct democratic legitimacy as opposed to indirect democratic legitimacy as through ministerial representation in the ESA's Council of Ministers, for example. And this is exactly one of the strongest arguments for integrating ESA into the EU.

The Green Paper was followed, in November, by the White Paper on Space. In parallel the EC and ESA signed a Framework Agreement, which entered into force in May 2004, and which proposed a structured framework for the relationship between the EU and ESA (see ESA 2003a: 29-31; ESA 2004a: 37). The Space Council was set up under this arrangement and met for the first time in November 2004. It is made up of a joint meeting of the ESA Ministerial Council and the responsible Council of the EU, *i.e.* national ministers of research and development or economic affairs.

The agreement between ESA and the EU recognized the specific complementary and mutually reinforcing strengths of the two bodies, and committed them to working together while avoiding unnecessary duplication of effort (see ESA 2003b). There are two main goals. The first is progress towards a European Space Policy. This means that the EU will try to meet demands for services by using the ESA space programme and its infrastructures. In that respect, ESA is acting in reality as an EU implementing agency. The second goal of the agreement is to make proper and suitable arrangements for cooperation between the two organizations, while recognizing and respecting mutual independence. This is meant to facilitate joint space activities and provide a stable framework for EU-ESA cooperation. The objectives are ambitious and could open the door to new ways of cooperation such as an ESA management of EU space activities and EU participation in ESA projects (Creola 2001: 87). On 7 June 2005, the Space Council decided on the sharing of roles and responsibilities at the highest level, and established priorities and guidelines. Accordingly, the EU is in charge of ensuring the exploitation of space for the benefit of citizens, coordinating requirements, and securing the coordination and promotion of a single European position on the international stage. This means the EU has a framework-setting function and ensures the representation of European space interests abroad. ESA and its Member States are in charge of space exploration and space science, and provide the tools needed for space activities, in particular actual access to space and the necessary technology. In Galileo and GMES, for example, the priority for space applications to benefit Europe's citizens has been spelt out. ESA will continue to manage such programmes and cater more for the practical side of space technology, despite the fact that the dividing line to the political side which may be seen as EU responsibility is by no means so clear cut (Hobe 2004 : 27).

In addition, the possibility of an EU space programme which would absorb ESA is also under discussion. There are pros and cons for the incorporation of ESA into the EU - for proposals of EU membership in ESA see (Gaubert 2009: 43; Dunk 2003: 85). The main considerations are that the EU has, as its vocation, the representation of the best interests of the European peoples and it could, therefore, reasonably claim that the eminently important area of space activities should come under EU auspices for this very reason. In that way the EU could provide its citizens with additional benefits, not least because the principle that concrete and immediate benefits must accrue to the European peoples from space investment has been stressed frequently by the EU and the Member States (FRG 2001: 1). On the other hand, Euro-sceptics argue that the reason why ESA has been moderately successful is precisely because it is *not* under EU management, that the EU administration is already bloated and would, hence, not be able to manage a space programme properly (Crawford 1990: 144; Gaubert 2009: 37; Dunk 2003: 85) - for successful (intergovernmental) ESA projects such as CERN, ECMWF, ESO, EMBO see (Gaubert 2009: 38).

In sum, the discussion about changing the institutional framework of ESA and the EU in order to arrive at a common or, at least, a more coherent space policy, is a very strong indication that the superlatives in government statements - see for example the German Research and Education Minister's statement at the ESA ministerial Council, Edinburgh 14 November, 2001, entitled "Engere Zusammenarbeit von ESA und EU stärkt die Europäische Raumfahrt." - and press releases are no mere exaggerations. A sea change has taken place which gives a prominence to space affairs Europe has not seen before. This is based on the strong perception that space has great future potential for Europe.

This goes hand in hand with the main EU goal of creating the world's largest information-based workforce. It almost goes without saying that space sciences are seen as crucial to making Europe fit for the 21st century. The industrial application of scientific results is one aspect, *e.g.* pure research on the ISS. As such, information networks in communication satellites and information gathering in earth observation, *e.g.* GMES, are just as important for a successful European future. In addition, an EU space programme would be vital to a common European defence strategy (Bildt 2000: 6). The Western European Union (WEU) is becoming the defence agency of the EU and the military satellite network which already exists under the European wing of NATO in the WEU may come under EU command as set out in the recently unveiled European Security and Defence Policy (ESDP) (Dunk 2003: 84). If the EU is serious about maintaining its satellite military intelligence-gathering capabilities, it will need a sophisticated space programme to support them, for the operative management of which ESA seems perfectly suited.

The EU is also set on developing its own infrastructures to become the world's second space power, after the USA. In order to achieve this, Europe must maintain a competitive space sector able to lead the search for new discoveries, and guarantee access to strategic data and new services. Only progress by breaking new ground will enable its share of the global commercial market to be consolidated (ESA 2005b).

An EU space agency could also forge new links with the Russian space programme, such as have already been used extensively in the past. This could further strengthen Europe's second position in the field of space, by drawing on Russian first-hand knowledge and space techniques (Peter 2009: 32-3).

The White Paper also made recommendations for the future relationship between ESA and the EU. It made it very clear that EU issues and the issues of space are no longer divergent; therefore "...it makes sense to aim for a closer institutional integration, thus ensuring the place of space issues in the overall evolution of European policies" (Bildt 2000: 7). The

Ministers responsible for space affairs agreed on the need for "...a process of institutional convergence that does not exclude bringing the present ESA within the treaty framework of the European Union." (Bildt 2000: 7) The Ministers proposed that the European Council should define a policy for space every five years. ESA should include defence strategies (Slijper 2008), and there should be opportunities for discussion in the European Parliament as to the direction the programme is to take (Bildt 2000: 7). Again, as space affairs have steadily become more important in European political considerations, the issue of democratic legitimacy cannot be glossed over. Their growing centrality needs resonance in political legitimacy and eventually financial sanction from the EP, which again is a strong argument for bringing ESA into the political framework of the EU. However, this is not as simple as it seems, as Alain Gaubert – former Secretary-General of Eurospace – points out: "Dealing with it [harmonisation of the roles of ESA and the EU] by saying that ESA must become an agency of the Community would be like imagining the problem can be magicked away. The crux of the problem consists of establishing relations between two entities of profoundly different character so that ESA can become the executive arm of Brussels in space matters without losing its own dynamism." (Gaubert 2009: 43)

Strategic potential

For the EU the strategic potential of space seems promising. There are many possible future fields of engagement, such as commercial launches, missions to Mars, moon research or a moon base, observation of Venus, and the completion of the Galileo satellite system – a summary of objectives was outlined by the second Space Council on 7 June, 2005 (ESA 2005a : 1). As outlined by European commissioner Günther Verheugen, "Space is an area where the added value of a joint and coherent policy on the European level is very clear. The industrial dimension of space is key to increasing the competitiveness of European industry." (ESA 2004b: 1; see also Verheugen 2005) It is clear that the industrial and economic potential of this area of activity is now fully appreciated by the European political authorities.

Furthermore, pressure for militarization of the EU has recently found opposition in a reassertion of the EU as a "civilian power" (Telò 2006: 51; Yakemtchouk 2005: Chs. 7-9). The case for larger military budgets for European countries is made in Trevor C. Salmon and Alistair J.K. Shepard (2003: 206). Mario Telò argues that Europe is not seriously considering becoming a military power, and ought not to do so (Telò 2006: 54, 145). He points out that Europe woefully lacks military capabilities, Europe must be seen as a very effective and indeed powerful international actor, because it has shown that it is perfectly able to turn to good account its well-versed abilities as a civilian power (Telò 2006: 57). Again, in contrast with the American inclination to deploy the military as a direct power tool, the EU has agreed (under the 'Petersberg tasks') to increased military capabilities only as a means of making its civilian engagement more credible, that is military intervention as a means of last resort, the existence of which might make opponents more susceptible to preceding peaceful exercise of influence (Telò 2006: 75). Telò also stresses alternative and more innovative avenues of future development and cooperation than the military, *e.g.* space endeavours as in the Ariane and the Galileo projects. In its very European way, the latter, unlike the US supported Global Positioning System (GPS), is not intended primarily for military use but primarily for civilian use and hence is importantly independent of US influence (Telò 2006: 54, 176). Thus, a European Space Strategy could become another component of European "soft power" expertise and be deployed, alongside other elements, as an effective tool in the field of foreign policy. An active European space policy could, therefore, provide a reasonable alternative to (military) power politics of other major powers in the world, an approach which would be more in line with EU "soft power" expertise and its history of its own anti-war development. If it is right to believe that sophisticated information technologies will be central to future politics, then space

technology could well help provide the European authorities with this currency in the future. This specifically European path need not lack power and influence.

Space exploration is another field with great potential. In the European integration process, it could become the extension of the older logic of a peaceful development of Europe in the post war period. Space exploration can draw on the dynamism of European integration and develop the outreach potential of the European integration process with the same vigour and prospect of success that its leaders have shown in their original drive "to make war not only unthinkable but also materially impossible" (see Schuman Declaration; Burgess 2000: 64-5). The benefits of space exploration to the EU will, therefore, be in the non-military use of its own outreach potential and in economic benefits of active industrial expansion, and might eventually even give the integration process a new objective even a symbol which could act as a focus for the dynamic power that carries European integration forward. It is the argument of this article that there is much greater potential in Europe as a civil power rather than as a military power. This argument has been conjugated in this paper for the space sector which is why military space programmes have not been dealt with in greater depth. Readers interested in this aspect should consider reading Slijper (2008) and ESA (2003a: 43-5). For the dynamism in European integration and the need for renewal, see Hoerber (2006b: 11-19). For arguments about strengthening European identity through an integrated space policy see Nicolas Peter (2009: 36).

Conclusion

Until recently ESA, in particular, and space affairs, in general, attracted very little serious and thoughtful attention, either from politicians or the general public. For a long time, space had been seen as a field for experts, Sci-Fi 'geeks' and a few bureaucrats, at best a field of minor commercial interest. This has changed in the past decade. For one thing, the potential benefits of space exploration and development have been discovered by politicians and economists alike. In both fields it has been realised that space endeavours can yield important advantages to citizens and investors. The Galileo project is one of the best examples of the combination of both. Secondly, space has found a popular resonance far beyond the Star Trek community. The appreciation of an increased awareness of European citizens of space activities was reflected in the ESA Ministerial Council meeting of 6 December, 2005 (ESA 2005b). On a side note, however the influence of science fiction as a motivation for space research by eminent scholars such as Stephen Hawking or its influence on the interest of the general public in space affairs should by no means be underestimated. More and more often reputable, popular magazines feature space topics which cater for a general interest in the question as to where the undeniable parallels between earlier space fantasies and the present technological development might lead mankind (see *Lufthansa Exclusive*, 2007: 18-30).

From a political perspective, it is this narrowing gap between aspiration and what is feasible in space which makes space policies so intriguing. It is the combination of potential for profit, with all the positive repercussions for a competition-driven economy, and the as yet untapped potential of increasing popular interest in space, which could eventually generate political support for grander space projects in the future. This is the strategic and political background to the debate concerning the relationship between ESA and the EU. On the one hand, the EU has always been an eminently political organisation, sensitive to the political potential any innovation may offer. A European space strategy is only one of the most recent examples. On the other hand, ESA has outgrown its bureaucratic roots and has acquired a political relevance which goes beyond merely administering limited national space investments (Hobe 2004: 27). Hence, the idea of bringing ESA under the EU roof would be another *political* step which could well serve to

further enhance the political influence of the EU in the future. It would also confer on space policies a political prominence which might be an indication of the importance this field will have in the future. An indication of the increasing centrality of space policy was given as early as 2001 (see FRG 2001: 2). Further appreciation of the future importance of a European Space policy was expressed at the second Space Council meeting in Luxembourg (ESA 2005a). A concerted and common European space strategy might be the next move, taking Europe forward to a position long enjoyed by the Americans (Hobe 2004: 27), perhaps to a further small step for one man, but a big step for mankind. This would implement one element of further integration of all of Europe's public organisations (Gaubert 2009: 44).

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