

mation on natural and human developments occurring nearly anywhere in the world.¹⁰

The Remote Sensing Space Systems Act represents a lengthy effort to achieve a balance of security and economic interests in an internationally competitive environment. There is no doubt that the Act is timely. Satellite technologies are advancing rapidly and the Government, through this Act, continues to work to establish a predictable framework for addressing current and future issues raised by these new technologies. The Act, should therefore serve Canadians well into the future.

¹⁰ JOHN C. BAKER, ET AL., *COMMERCIAL OBSERVATION SATELLITES: AT THE LEADING EDGE OF GLOBAL TRANSPARENCY* 7 (2001).

CURRENT STATUS AND RECENT DEVELOPMENTS IN UK AND EUROPEAN REMOTE SENSING LAW AND POLICY

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“Law is nothing other than a certain ordinance of reason for the common good, promulgated by the person who has care of the community.”

Thomas Aquinas (1225 - 1274)

I. INTRODUCTION

There is no doubt that service to the common good is behind most of European remote sensing and Earth observation activity. Weather satellite data through *EUMETSAT* have made the transition from research into operational applications, largely through providing information for the common good through weather forecasts. The common good, although not specifically the public good as used in economics, is behind many space initiatives such as Global Monitoring for Environment and Security (GMES), the *GALILEO* navigation system and the U.N. Charter on Space and Major Disasters. Is there a need for a policy or legal basis when technology is used for the common good? Many scientists would argue that because public funds are used to launch spacecraft and to provide data from space platforms, the data should be provided openly and free of charge, so there is no need for regulation, policy, or law to intervene. However, that is not the experience of many in practice who see a clear need for at least harmonisation of rules and procedures or the development of new policy or legal structures to develop the Earth observation sector further.

Europe has had an interest in space policy for many years and so provides a useful case of what Aquinas calls “a certain

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ordinance for the common good.”¹ Through the European Space Agency and the European Commission, Europe is continuing to build an independent and autonomous capability to exploit space, including Earth observation, and at the same time is building a firmer policy and legal framework. This paper first examines the development of data policy for Earth observation in the European Space Agency, and then goes on to examine relevant directives developed by the European Commission that apply to Earth observation data. This has, in part, provided the backdrop to a long running concern for a coherent European space policy that was agreed upon in 2007 between the European Space Agency and the European Union. After considering the European level, the paper examines the case of the United Kingdom which had an outer space act as early as 1986. The U.K. has preferred a rather weak set of strategy statements instead of a policy, and this stance reflects its funding composition.

II. EUROPE

A. *European Space Agency*

The European Space Agency (ESA) has launched three major Earth observation satellites: *ERS-1* in 1991, *ERS-2* in 1995 and *Envisat* in 2002. While the major part of the financial investment in these three Earth observation satellites was in the technology, ESA did prepare at the policy level for the exploitation of the data collected by the satellites. The data policy for *ERS-1* was not agreed for some years after the launch of the satellite, which led to months and years of confusion over the conditions of access to the Earth observation data. Given this experience, ESA was keen to prepare the way for a data policy for the *Envisat* satellite well ahead of the launch of the satellite

¹ European Commission, *Space: a New European Frontier for an Expanding Union. An action Plan for Implementing the European Space Policy* (Nov. 11, 2003), available at http://ec.europa.eu/comm/space/whitepaper/whitepaper/whitepaper_en.html [hereinafter *New European Frontier*]. See also K. Madders and W. Thiebault, *Carpe Diem: Europe Must Make a Genuine Space Policy Now*, 23(1) SPACE POL’Y 7-12 (2007) [hereinafter *Carpe Diem*].

itself. The reason for this preparation was not only to have a plan for the dissemination of data by ESA itself, but also to prepare for the desired shift to operational and possibly commercial use of the *Envisat* data. During the period 1997–1999 ESA and its member states developed a policy and then an accompanying implementation plan for *Envisat* data that codified the conditions of access to the data. The data policy was then subsequently retrofitted to the *ERS-1* and *ERS-2* satellites to become the data policy for all three Earth observation missions and the foundation for all of ESA’s Earth observation data policy as new satellites are developed.

The objectives of the *Envisat* data policy are to maximise the beneficial use of *Envisat* data and to stimulate a balanced development of science, public utility, and commercial applications consistent with the objectives of the *Envisat* mission.² The *Envisat* data policy recognises two categories of use of the data, namely (ESA 1998):

Category 1 Use. Research and applications development use in support of the mission objectives, including research on long term issues of Earth system science, research and development in preparation for future operational use, certification of receiving stations as part of the ESA functions, and ESA internal use.

Category 2 Use. All other uses which do not fall into category 1 use, including operational and commercial use.³

ESA is normally responsible for the distribution of the data that falls into category 1 use; that is data that are normally used for scientific purposes by Principal Investigators on approved (typically peer-reviewed) applications, technology development, or science projects. The category 2 use distribution is

² Ray Harris, *The New ERS and Envisat Data Policies*, in FROM DATA TO INFORMATION 341-45 (Remote Sensing Society, Reading, Conference Proceedings, 1999). See also Ray Harris, *Earth Observation and Principles on Data*, in LAW AND GEOGRAPHY 539-55 (C. Harrison and J Holder, eds., 2003).

³ See generally, European Space Agency, *The Envisat Data Policy*, ESA/PB-EO(97)57 rev.3, Paris (Feb. 19, 1998), available at http://www.knmi.nl/samenw/geoss/esa/Envisat/ESA_PB-EO_97_57,REV_3.pdf.

assigned after a competitive procedure to what ESA calls *distributing entities*, a clumsy term that leaves the door open to a wide variety of distribution organisations but in practice consists of Earth observation companies in Europe. These distributing entities then sell the *Envisat* standard products plus the value-added products that they produce themselves, often in association with the research and development activities carried out by Principal Investigators leading research on ESA-approved projects.

B. European Commission

The European Commission has had a long-term interest in space policy. The European Commission is essentially the civil service arm of the political entity of the European Union. The next section of this paper considers the development by the European Commission of policy that is specifically related to space, including Earth observation, but before that consideration is given to policies developed by the European Commission that implicitly include remote sensing data through directives either on the environment or on general data bases.

The European Council Directive 90/313/EEC of 7 June 1990 defined the terms of access to environmental information held by public bodies with the main objective being freedom of access to the data.⁴ This was and is very much in the spirit of freedom of information now common in the legislation of many countries. The directive mandates European Union (E.U.) Member States to ensure that public authorities make available information on the environment, including implicitly information on the environment provided by remote sensing instruments, to any natural or legal person and that the charge for supplying the information must not exceed a reasonable cost.⁵ The term “reasonable cost” is somewhat similar to the concept of the cost of fulfilling a user request (COFUR) that is used in the United States for federally-produced data, although the term “reasonable cost”

⁴ See European Council Directive 90/313/EEC (June 7, 1990), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31990L0313:EN:HTML>.

⁵ *Id.*

is not as clear as the term COFUR.⁶ The 7 June 1990 directive was replaced by Directive 2003/4/EC of the European Parliament and Council which entered into force on 14 February 2003.⁷ The 2003 directive ensures that environmental information is systematically available and disseminated to the public. The definition of environmental information in the 2003 directive is more explicit and includes the following.

- Data on activities affecting the environment
- Environmental impact studies and risk assessments
- Reports on the state of the environment
- Environmental authorisations and agreements

Earth observation data can be readily included in two of the four categories, namely data on activities affecting the environment, such as pollution events or natural disasters, and reports on the state of the environment because by their nature Earth observation data provide an update report on the environment of planet Earth. The 2003 directive mandates that the environmental information must be available no later than one month after the receipt of a request and that “all information held by public authorities relating to imminent threats to human health or the environment is immediately disseminated to the public likely to be affected.”⁸

By contrast the directive on the legal protection of databases, Directive 96/9/EC of 11 March 1996, is designed to afford an appropriate and uniform level of protection of databases to secure remuneration to the maker of the database.⁹ There is

⁶ See RAY HARRIS, *EARTH OBSERVATION DATA POLICY AND EUROPE* (A. Balkema, Lisse, The Netherlands (2002)).

⁷ See Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, 2003 O.J. (L 041) 26-32 (EC), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0004:EN:HTML>.

⁸ *Id.*

⁹ See Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, 1996 O.J. (L 077) 20-28 (EC), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0009:EN:HTML>.

some scope for conflict between the 2003 environmental information directive and the 1996 database directive. The first is targeted at public information and the second is targeted at private-sector information; indeed the database directive was stimulated by concern for protection of the music industry as the industry became more digitized.¹⁰ However, even though the database directive was intended for the digital music industry it is also applicable to the digital remote sensing sector in that it applies to all digital data within its scope.¹¹

The European Commission has worked in recent years to develop a directive that is concerned with the more specific sector of spatial data. On 14 March 2007 the European Parliament and the Council established Directive 2007/2/EC to establish the Infrastructure for Spatial Information in the European Community (INSPIRE).¹² It entered into force on 15 May 2007.¹³ The INSPIRE directive recognises that there is fragmentation of spatial data and a lack of harmonisation in data availability between different countries and at different spatial scales. The INSPIRE initiative is intended to stimulate the creation of a European spatial infrastructure that delivers integrated spatial information services.¹⁴ Earth observation data is a major source of spatial information in Europe and will fall within the remit of the INSPIRE directive. It may be that Earth observation data used in Europe will have to become “INSPIRE-compliant” in line with the directive.

C. European Space Policy

The European Space Agency and the European Union through the European Commission have spent over two decades preparing for a new European space policy. A Framework Agreement between the European Union and ESA was agreed

¹⁰ *Id.*

¹¹ *Id.*

¹² See Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), 2007 O.J. (L 108) 1 (EC), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:108:0001:01:EN:HTML>.

¹³ *Id.*

¹⁴ *Id.*

in May 2004 to formalise the shape of the relationships, followed by meetings of a Space Council in 2004 and 2005.¹⁵ The development of a European space policy gave birth to high hopes that real progress would be made and not “merely seek to rearrange what is already there or expose yet again what is being done.”¹⁶ The European space policy documents speak in strong terms about the space sector being a strategic asset for Europe, an asset that provides an important strand of independence and autonomy for Europe in the context of existing and developing major space and economic powers such as the U.S., Russia, and China. Space is vital to Europe’s sustainable development strategy and is relevant to the European Common Foreign and Security Policy. The Vice-President of the European Commission who launched the European Space Policy report, Gunter Verheugen, even claimed that:

Without the European space policy, Europe could become irrelevant. With this [policy], we intend to live up to Europe’s global leadership aspirations in important industrial and research areas, which will provide growth and jobs for the future.¹⁷

The natural balance between ESA and the E.U. is for ESA to take responsibility for leading on space science, space exploration, and the development of tools to access and exploit space, while the European Union leads on applications that contribute to the achievement of European policies.¹⁸ The overall aims of the European space policy go beyond that simple division and the policy lists the following five elements of its strategic mission.¹⁹

¹⁵ Council of the European Union 2007, *Outcome of the proceedings of the Council (Competitiveness) on 21-22 May 2007 – Resolution on the European Space Policy*, 10037/07, Brussels 25 May 2007.

¹⁶ *Carpe Diem*, *supra* note 1, at 7.

¹⁷ See ESA, *Europe’s Space Policy Becomes a Reality Today*, ESA NEWS (May 22, 2007), available at http://www.esa.int/esaCP/SEM4UU8RR1F_index_0.html.

¹⁸ *New European Frontier*, *supra* note 1. See also N. Peter, *The EU’s Emergent Space Diplomacy*, 23(2) SPACE POL’Y 97-108 (2007) [hereinafter *EU’s Emergent Space Diplomacy*].

¹⁹ EC 2007, *Communication from the Commission to the Council and the European Parliament – European Space Policy*, COM(2007) 212 final (Brussels, April 26, 2007).

- To develop and exploit space applications serving Europe's public policy objectives and the needs of European enterprises and citizens, including in the field of environment, development and global climate change.
- To meet Europe's security and defence needs as regards space.
- To ensure a strong and competitive space industry which fosters innovation, growth and the development and delivery of sustainable, high quality, cost-effective services.
- To contribute to the knowledge-based society by investing strongly in space-based science, and playing a significant role in the international exploration endeavour.
- To secure unrestricted access to new and critical technologies, systems and capabilities in order to ensure independent European space applications.

After this statement of its strategic mission the European space policy examines the main applications of space, the technology foundations or platforms for space exploitation, the role of a European space industry, and the governance of space in Europe. Earth observation appears under the main applications section, along with satellite navigation (essentially the *GALILEO* mission), satellite communications, and security and defence use of space. In Earth observation the need for European independence and autonomy is clearly stated, with an emphasis on developing further the initiative on Global Monitoring for Environment and Security (GMES)²⁰ which itself is Europe's contribution to the Global Earth Observation System of Systems (GEOSS).²¹ Under security and defence the policy sees a closer coordination between civilian and defence space programmes, much has occurred in the U.S. with the NOAA and DMSP programmes.

²⁰ Anne Barbance, *A market for GMES? Results of the Graz Conference*, 23(1) SPACE POL'Y 53-56 (2007).

²¹ Conrad C. Lautenbacher, *The Global Earth Observation System of Systems: Science Serving Society*, 22(1) SPACE POL'Y 8-11 (2006).

D. Trends in European Earth Observation

The new European space policy is part of a wide process of making more explicit Europe's position on space. Through ESA, Europe has had a highly successful experience of space missions. The European Union though has explored space in a much more uncertain way but has now alighted on the use of space to support its own policies for which it has legitimate political authority.²² As money is often considered the demonstration of political will, there is now scope for European Earth observation to have stronger autonomy and independence, be more closely tied to global competitiveness by exploiting high technology, and to continue the political thrust of the expansion of the European Union eastward to enlarge the markets open to the European space industry.²³ These trends are not only concerned with the technology but with the ways in which the technology of Earth observation is used in the wider world.

III. UNITED KINGDOM

A. U.K. Space Law 1986

The United Kingdom was one of the first countries to adopt a space law, the Outer Space Act of 1986. The purpose of the act was relatively restricted as it concerned the authority of the Secretary of State to grant licences to launch and operate space objects or carry out other activities in outer space by persons connected with the U.K. An important dimension of the purpose of the act was to enable the U.K. to be compliant with its international obligations. The core power was contained in section 4(1) of the act which states that, "[t]he Secretary of State may grant a licence if he [sic] thinks fit," followed by general guidance on the scope of the conditions under which and to whom the licence may be granted. The U.K. now intends to review the Outer Space Act of 1986 in the light of new technol-

²² See *Carpe Diem*, *supra* note 1.

²³ *EU's Emergent Space Diplomacy*, *supra* note 18.

ogy.²⁴ Virgin Galactic and other companies will soon be offering space tourism opportunities, and the U.K. is expected to review its space law to control the space tourism industry, the behaviour of British subjects in space, criminal offences in space, dumping of waste, and damage to celestial bodies.

B. U.K. Space Strategy Since 2003

The U.K. space law has not until recently had a high profile because the U.K. government has used its investment in ESA as the method of gaining access to space. The U.K. Outer Space Act of 1986 is notable for lacking a consideration of the objectives of the use of space. However, such considerations have been present in a series of space strategies developed by the British National Space Centre (BNSC) since the 1980s. The BNSC is not a single entity, but is a partnership of the following government departments and research councils: the Department for Environment, Food, and Rural Affairs (Defra), the Foreign and Commonwealth Office (FCO), the Department for Transport (DfT), the Ministry of Defence (MoD), the Meteorological Office, the Department for Innovation, Universities, and Skills (DIUS), the Natural Environment Research Council (NERC), and the Science and Technology Facilities Council (STFC). In 2003 the BNSC produced its *UK Space Strategy 2003 – 2006 and beyond*. The strategy articulated the three main objectives of the U.K. strategy:

1. To enhance the UK's standing in astronomy, planetary and environmental sciences.
2. To stimulate increased productivity by promoting the use of space in government, science and commerce.
3. To develop innovative space systems to deliver sustainable improvement in quality of life.

²⁴ Richard Gray, *Ministers Order Review Of Space Law*, THE DAILY TELEGRAPH (Nov. 5, 2007), available at <http://www.telegraph.co.uk/news/uknews/1568298/Ministers-order-review-of-space-law.html>.

To support this strategy the BNSC partners have been spending of the order of £200 million per annum on space in recent years,²⁵ of which about two thirds is spent through ESA and about one third nationally. Earth observation is the largest element of the BNSC budget. Of the total spent in 2005-06 of £207.1 million, Earth observation accounted for £82.3 million split between £45.2 million through ESA and £37.1 million nationally.

It is arguable that the objectives in the 2003-2006 strategy were rather capacious and as a result anodyne. Unfortunately, the 2007-2010 strategy has not provided much more focus. The new strategy also has three objectives which are extensions of the previous objectives. The three objectives are to deliver world class science, to deliver public benefits through working with government agencies, and to maximise the potential for wealth creation. This anodyne approach to strategy is perhaps not surprising given the partnership structure of the BNSC. Each partner needs to satisfy its own stakeholders that the financial contribution to space activities meets the organisation's own needs and goals. A good case in point is the Natural Environment Research Council (NERC) whose spending on space (primarily Earth observation) rose from a level of about £11 million per annum to a level of above £50 million per annum. This situation resulted from NERC being allocated funds from another government department, but NERC then spends the funds in pursuit of its own environmental science objectives stated in its own corporate plan and not necessarily on the U.K. national objectives on space.

IV. CONCLUSIONS

Member states provide funding to ESA on the order of €3 billion euros per annum and, in addition, spend nationally at around the same level. During the period 2007-2013 the European Commission will devote a total of €2.8 billion to space applications. The industry in Europe is substantial. In 2005,

²⁵ HMSO 2007, *A Space Policy*, Science and Technology Committee, Seventh Report, HC 66-I, House of Commons, London (July 4, 2007).