

SPACE IMAGING DATA POLICY AND REGULATORY STRUCTURES

Professor Michel Bourbonnière

Professor Louis Haeck

Royal Military College of Canada

INTRODUCTION

Modern society is presently going through an information renaissance. Johannes Gensfleisch, known as Gutenberg created a printing press which revolutionised the distribution of information and knowledge. The first printed books were not only a commercial success but profoundly changed human thought and its expression. Similarly, new technologies are presently evolving allowing global distribution of data. Data which was hitherto the exclusive domain of military intelligence and spy satellites¹ is now being commercialised. Overhead imagery from the quintessential high ground has proved valuable in military operations. Thus the commercial availability of this type of data has raised concerns over its effect on national security issues. Indeed, space based assets are an important part of this information renaissance for both the military and civil society. The commercial exploitation of remote sensing satellites are consequently, creating turmoil for regulatory authorities. When the Berlin wall came crashing down, so did the architecture upon which rested our concepts of geopolitics and hence, of national security. Post cold war military operations have radically changed. Humanitarian interventions, and wars of independence have replaced the cold-war conflicts. Paradigms which used to define our views of the world suddenly lost their pertinence but remain still present within regulatory structures. Unfortunately laws and regulatory habits are slow to change. Nonetheless, we are presently entering a new epoch, one of 'increased transparency in human activities'², both public

and private. Transparency of public action is of primary importance to western democracies. Governments now seek to regulate this transparency balancing carefully both public and private interests.

We are presently in a transitional regulatory period. The period is transitory simply because there is no homogeneous ethos, or paradigm premising a regulatory structure for space based imaging. Laws on this issue now have contradictory attributes. Sometimes national security overtones are dominant in regulating a commercial activities. Security law and commercial law have very different needs and presuppositions. Regulatory tensions therefore occur. Public law paradigms sometimes attempt to regulate what are now becoming private interests. Again regulatory tensions occur. Laws can have commercial goals but betray these objectives through the use of an ensuing regulatory matrix which presuppose non commercial paradigms³.

A DISTINCTIVELY CANADIAN POLICY AND POLICY TOOLS

Policy tools are the methods used by governments to implement policy decisions. The Radarsat-1 project consists of a government owned and operated satellite. Thus, policy is implemented through administrative decisions taken by the owner of the satellite. Data policy for Radarsat-1 is enunciated in an agreement between CSA and NASA copying the American

1 See L. Haeck & M. Bourbonniere, Overhead Imagery and Espionage: International Law Implications, in (1998) Vol.8 The Caribbean Law Review pp. 287-298.

2 John C. Baker and Ray Williamson, Licensing of Private Remote Sensing Space Systems, Space Policy Institute, Elliott

School of International Affairs, George Washington University, April 2 1998, Prepared Statement Submitted to the U.S. Department of commerce, NOAA, in response to the public hearings on proposed regulation for U.S. commercial remote sensing, p.1, copy on file with the author

3 On this point see: Michel Bourbonniere, A Critical Review of American regulations pertaining to Commercial Remote Sensing Market Structures, in Annals of Air and Space law Vol XXII (1997) p. 455-483

vision. The Radarsat-1 project is commercial in nature in the sense that data obtained by the satellite is commercially available, that is sold to consumers. Radarsat-1 is not a pure commercial venture in the sense that the cost of the infrastructure, and of the data, are not completely factored in the price consumers pay for the data. Thus, contrary to a purely commercial venture, the goal of the Radarsat-1 project is not to recuperate the investment and make a profit. Rather, and this is typical in a government activity, the benefits of the operation are conceived in more broad industrial development goals. Since the satellite is government owned, business risks, as traditionally understood in a free market structure, are non-existent. Market structures were not to influence this project. Consequently data policy does not consider possible implications on market structures.

The Radarsat-2 project marks an important evolutionary step for Canada in commercial space development. The new Radarsat-2 satellite will not be owned by the government. Radarsat-2 will be a privately owned Canadian space asset. Nonetheless the Canadian government keeps an important role in the project on two levels.

First, the government becomes a consumer of space data imagery. Part of the financing of this satellite is achieved through a long term data imagery purchase agreement. This is perceived by the Canadian government as being a strategic investment which can be repaid to the government through the supply of space based imaging data. In the case of Radarsat-2 the space data is prepaid, factoring in interest costs. In this sense the Canadian government is lowering the business risk of the investors by guaranteeing a certain amount of consumption of space based imagery. In so doing, the Canadian government is reducing the cost of doing business without any direct government expenditures specifically designed to do this. In other words there are no subsidies. The policy tool used is commercial in nature being a contract. The Canadian government can therefore be perceived by Radarsat-2 as a client.

Within a market structure, the needs of the client become an important aspect in the supply-demand relationship between supplier and consumer. By using a commercial technique to promote Canadian space development, the Canadian government also encourages the genesis of a commercial market structure for space data imaging. The usual ensuing commercial dialectic must necessarily follow. The needs of the consumer being the government can come from different activities such as civil duties, international obligations, or specific departmental needs such as, National Research Council, AES, Agriculture Canada, DFAQ DND, just to name a few.

Second, and this is an innovative concept, the Canadian government and the owner of the new satellite have agreed through a contract that the Canadian government shall remain the "Custodian" of the data policy. The extent of the Canadian government's involvement in Radarsat-2 data policy depends upon the interpretation of the word "custodian". Nonetheless, the vehicle to implement data policy *prima facie*, could still remain an administrative decision. Contrary to Radarsat-1, certain decisions pertaining to data policy will not be taken by the owner of the satellite but by one of the clients. Granted, it may be by the most important client if not the major client, who makes these data policy decisions, but nonetheless a client and consumer. The data custodian concept is innovative because in a classic market structure a client does not directly impose policies upon a supplier.

The ordinary meaning of the word custodian is that of guardian or keeper usually of a public space⁴. In this case data is the property of the owners of Radarsat-2. The guardian of public property is therefore not a reasonable interpretation of this concept. Furthermore the Canadian government is not custodian of the data itself but of the policy pertaining to the data. Establishment of public policy is however a function of government. Nonetheless this

⁴The Oxford Illustrated Dictionary, p.209

clause now gives the government a contractual right, or tool to establish data policy

Several important questions now arise, namely: what is the relationship between a custodian of policy and the owner of private property? What are their respective rights?

A custodian can also refer to "a person named to manage property"⁵ Giving a broad interpretation to this managerial aspect, day to day data managerial functions could be the obligation of the Canadian Government. A narrow interpretation of the managerial aspect could give the Canadian government simply a right of surveillance of the data policy management of the satellite owner. Still, more complex questions arise. In managing private property use as data policy custodian, are there fiduciary obligations for which the Canadian Government is responsible? How are private interests to be balanced with public interests by a public custodian of policy affecting commercial distribution private property which can have national security implications? To what extent may the custodian intervene in corporate decisions and commercial alliances? May contracts be reviewed or even annulled by the Custodian for policy reasons? Can this concept be used to impose a shutter control policy or does this concept simply affect data already obtained?

From a security perspective the term custodian has been used by our British friends in the Trading with the Enemy Act, 1939, s.7, and the Enemy Property Act, 1953. In these laws there was a "Custodian of Enemy Property". These were "officials appointed by the Board of Trade to prevent payment of moneys to enemies and to preserve enemy property during the war"⁶. Thus, in our case, should the Custodian only exercise his powers in times of national security? What is to be the interface between the right of the custodian to interfere in times of

national security and our constitutional rights pertaining to freedom of speech? We argue that the custodian concept should have a restrictive interpretation limited to issues of national security and public safety. The effect of a broad interpretation is not reasonable for two reasons.

First, a broad interpretation could result in an unacceptable restriction of proprietary rights. This could even be taken to an extent where it could become a form of expropriation without compensation. Secondly, a broad interpretation could impose a strong liability factor upon the Canadian government pertaining to data misuse in civil society.

We argue that there should at least be a clear definition of what constitutes national security issues for space based imagery. If Radarsat-2 is to become a true commercial venture the custodian concept must not be interpreted so as to permit government interference in a private business venture.

Since the custodian is an agency of our federal government does it have an obligation, (and therefore responsibility) to protect Canadian citizens from abusive uses of overhead space based imagery?

Nonetheless, and despite any interpretation which can be finally given to the "custodian" concept, national policy pertaining to uses of outer space remains a function of our Canadian Federal Government which cannot be contracted away. Even without this "custodian" concept the Canadian government can always regulate space data use policies.

In implementing its data policy decisions, be it as custodian or simply through national laws, the government must now be careful to implement its policies in a manner to allow the proper market dynamics to develop. The Canadian government has an important role to play on both sides of the supply-demand equilibrium. As custodian of the data policy the Canadian government plays a new and distinctive role on the supply side, along with its role as a consumer of prepaid data on the other side of this commercial equilibrium.

In deciding how to manage this distinctly Canadian dichotomy, a review of the

⁵http://www.nolo.com/dictionary/Dictionary_alpha.cfm?wordnum=ber=159&alpha=c

⁶Jowitt's Dictionary of English Law, Second Edition Vol.1, p. 534, London, sweet & Maxwell Limited.

American commercial data experience might be very enlightening. Our southern neighbours are the greatest of space faring nations. Their achievement in outer space are unmatched by any other nation. Consequently, the American legislators also have more experience in dealing with these issues than anyone else on this planet. This note suggests we benefit from our American neighbours and build from their experience while adding our distinctively Canadian touch.

THE AMERICAN REGULATORY STRUCTURE

The American legislators have used space laws and the regulatory process to enact space policy. No other country has space legislation which is as complex and evolved as the Americans. American laws have followed their technological prowess. Concerning space data imagery two important laws were adopted in the past 20 years, being The Land Remote Sensing Commercialisation Act⁷, and the Land Remote Sensing Policy Act⁸. A detailed regulatory structure ensued from the first act. These regulations are presently the subject of public hearings and review.

We have not yet adopted space legislation per se in Canada. Our space activities are to say the least much more humble. Nonetheless other nations are now enacting national space acts. Australia has recently promulgated a law regulating activities in outer space⁹. The Australian Space Activities Act establishes a regulatory structure for space activities which are carried on from Australia or by Australians abroad, regulates issues pertaining to compensation for damages resulting from space activities, and implements Australia's general obligations as established

in the corpus lex spatialis. This notes argues that the moment is propitious for Canada to follow the Americans and Australians and use this policy vehicle to regulate its space industry.

Public policy enactment is the unquestionable role of governments. Irrespective of the vehicle used, be it laws, regulations or administrative directives, the role of these "norms" remain the same. It is however important to stress the following caveat. Public policy decisions must never attempt to regulate technology itself. Norms are used to regulate human activities, and competing interests which results from new technologies. Therefore, the focus of norms will be determined by a decision of which human activity needs to be controlled, and which social values are to be promoted. This decision presupposes different interests from different sectors of society in the subject activity. If all sectors of society had the same interest, then we argue, there would be nothing to regulate and policy would not be required.

Space based imaging data policies, in both the internal American rules, and on the international level have in the past been permeated by two fundamental premises. These are: first, data issues are national security concerns. Second, space based data imagery concerns the activity of states and are therefore dealt with through international public law instruments and institutions. These two premises are natural and logical corollaries of one another. From these two premises flows the present regulatory matrix. This note argues that this matrix may have been at its inception reasonable. However the fundamental nature of the activity along with the geopolitical environment within which it must function has changed. We are now faced with policies which were adopted based on a specific paradigm which no longer exists. Presently norms are defining an activity which is functioning on a different paradigm¹⁰. A conflict between the

⁷15 USC 4201, sanctioned July 17 1984

⁸15 USC 5601, sanctioned October 28 1992

⁹ see: An Act about space activities and for related purposes (Space Activities Act 1998), assented to December 1998, No. 123.

¹⁰ see Joan Johnson-Freese and Roger Handberg Space The Dormant frontier. Changing the Paradigm for the 21st Century, by praeger, 1997; see also Raymond Harris Earth Observation Data policy, 1997, John Wiley & Sons.

policy and the activity necessarily occurs, and is fundamentally a conflict between paradigms. The policy structure remains logical but in relation to these modifications and different paradigms is no longer reasonable.

An example of the first premise is the national security concept which permeates American space based image licensing rules.

The second premise is evidenced by the international instruments on this issue. The main document in this sector is the United Nations principles which were accepted by the UNGA. These principles focus upon the rights of states on data acquisition and the right of the sensed states to have access space based data imagery of its territory. The entire dialectic behind these principles rested on issues of national sovereignty and rights to collect data from public international space. These are all concepts which are fundamental issues of pure public international law. In this case the actors which are the subjects of the "principles" are the States themselves as States "qua" States and not as commercial actors. This vision presupposes that space exploration and use is a "public" activity which by definition is carried on by States. This vision also permeates all other space law instrument. This however is not to say that private space endeavours are not accepted in space law treaties. Commercial space ventures are definitely legitimised by the major space treaties. Nonetheless commercial space endeavours remain a secondary issue within the instruments of the "lex spatialis".

Space imaging technology was initially developed as a military technology during the bi-power, and bi-polar cold war epoch. The regulatory and institutional superstructure which ensued was not only logical and necessary but also reasonable for the time of their genesis. Very important developments in international law were achieved during this period of military space development and exploration. The irony of this epoch is that the greatest threat to human existence generated the greatest of human endeavour, space exploration. The institutions and regulatory matrix reflected the paradigms of the cold war based on systemic competition

between the western democracies and the communist east. The remote sensing principles also reflected the north south cleavage between developed and developing nations, an issue which was of particular importance to Canadian foreign policy during the Trudeau years.

We proffer that data policy for space based imagery must now be based on a different premise which presuppose the new paradigm of global economies. International paradigms have changed. The cold war systemic competition no longer exists. The regulatory matrix which was based on the previous paradigms are still logical in their structure but are no longer reasonable in their application. The matrix must now be structured upon different premises which emanate from the new paradigms.

We thus argue, that a space based data policy must now be based upon two basic premises, these are:

1) Space image data from privately owned space assets is a private commercial activity which must be regulated through commercial rights, on an international level playing field;

2) civil liberties , and democratic rights must permeate the regulatory matrix;

Furthermore this must be achieved through a well co-ordinated multilateral structure. A cohesive multilateral approach in both public and private spheres is the key to successfully regulating commercial space based imaging. From a public perspective an international structure on commercial space imagery with all space fearing states is required. On a private level , an international trade association regrouping the commercial suppliers of space imaging data would greatly help in structuring the industry.

This is not to say that security issues are no longer pertinent in space based image data policy. There are definite security issues in space based imagery. However the previous regulatory structure attempted to regulate commercial private space data activities subject to a "national security" vision of the world. We argue that data policy must take the opposite

tack and follow the trade winds. The failure to navigate in this new direction will only lead our legislators into the commercial doldrums. We argue that a multilateral dialectic between industry and governments as hereinabove described is the best scenario in which to address these complex issues.

Securities issues must now conform to commercial paradigms. The vocabulary, and conceptual framework of the policy must be fundamentally commercial in nature. In other words, national security issues, which do still exist, must now be redefined in commercial concepts.

This note argues that a successful data policy must strike a balance between the commercial and security issues from a commercial perspective, not only using a commercial vocabulary, but also through commercial institutions. The result of a successful space image data policy will rest upon the ability to assure accessibility to space image data markets and technology for Canadian suppliers.

This note argues that market accessibility can best be assured through established institutions regulating international trade. Viewed in this way, data policy is fundamentally an international trade concern.

Space based image commerce is a multi dimensional trade concept. By analogy it is an international trade of raw materials if we speak of raw data. It is a trade of industrialised goods if we speak of processed images. It is a trade of services if we speak of having the data interpreted and processed in other countries. A data policy must encompass all of these levels and industrial concerns. To ensure a robust Canadian industry for space based imagery a successful policy will address all three of these sectors.

Canadian markets are small, space development is expensive. Thus international market accessibility is fundamental to the development of the Canadian space data industry. One of the thrusts of a Canadian space data imaging policy must be to ensure market accessibility for the Canadian space image data

industry. This industry is a highly competitive one where technological development can ensure market penetration. The Canadian space image data policy must therefore ensure a subtle regulatory structure enabling technological development and applications to be quickly applied in data acquisition, processing, and distribution. To be successful in a competitive market, industries must lead and not follow. This note therefore argues that the Canadian government must establish a data policy designed to promote Canadian industrial development through a comparative regulatory advantage on our competitors. Canadian industry must remain on the cutting edge of space based imagery technology. Our stated goals and our regulatory structure be they through administrative rules of laws and regulations must be cohesive, flexible and clear.

The largest markets for space based products is located just south of us in the United States. The Americans are also one of our major competitors in the remote sensing data industry along with the French, Indians, et al.. The Americans have a technological edge and a formidable industrial base. Nonetheless their major weakness is their regulatory structure which is overbearing, redundant, ambiguous, riddled with market entry barriers, legal amphibology, and permeated with obscure national security concepts¹¹. Although the stated legislative goals are to promote commercial development, their regulatory structures betrays their legislative declarations. A change in this structure does not appear imminent. Unfortunately, the proposed

11 The U.S. House of Representatives Committee on Science commenting on the proposed new regulatory structure for commercial remote sensing argued in a letter to Mr. Charles Woolridge NOAA/NESDIS, that, 'Unfortunately, the draft regulations proposed by the Commerce Department on November 3 1997 could undermine the goals of the American people, the law of the land, and publicly announced Presidential policy by creating an unstable business environment in which bureaucratic decisions regarding remote sensing will be made on an ad hoc basis, instead of following clearly laid out regulations and procedures. The regulation makes burdensome demands on the private sector...' copy of which is on file with the author

regulatory reform in the United States for licensing space imagery operators has so far ignored justified concerns from the American space image data industry in their request for liberalisation of the industry, and respect of constitutional rights.

Furthermore, and ironically, for the United States has a strong tradition of defending civil liberties, the American legislators have sacrificed constitutional rights on the altar of national security. The constitutionality of regulations which are overly influenced by vague concepts of national security remains questionable. The U.S. Supreme Court established in the case of Near Vs. Minnesota¹² that publication of information could only be restricted under very strict and narrow circumstances during exceptional cases. First Amendment constitutional rights¹³ are not absolute and can be sacrificed if there is a clear and present danger to national security¹⁴ During the Vietnam conflict this principle was tested and strengthened by the courts¹⁵

Furthermore overbearing security rules reduce the competitiveness of space based imaging data suppliers. Even the latest presidential directive¹⁶ entrenches the fact that the American space image industry is to follow and not lead, stating that the issue of image resolutions is contingent upon what is readily available on the international market¹⁷.

12 283 U.S. 697 (1931)

13 For an excellent discussion on this issue pertaining to remote sensing regulatory structure see Joint Comments of the Radio-Television News Directors Association and National Association of Broadcasters before the Department of Commerce, Docket No. 951031259-5259-01 dated April 1 1998
14 *IBIDEM*, see also *Scenck v. United States* 249 U.S. 47, 51-52 (1919)

15 *New York Times, Co. V. United States*, 403 U.S. 713,

¹⁶Presidential Decision Directive INSC-23 (PDD-23) entitled *U.S. Policy on Foreign Access to Remote Sensing Capabilities*, dated March 9 1994. <http://www.fas.org/irp/offdocs/pdd23-2.htm>

¹⁷*IBID*, As far as licensing and operation of private remote sensing systems are concerned PDD-23 states that "There is a presumption that remote sensing space systems whose performance capabilities and imagery quality characteristics are available or are planned for availability in the world marketplace (e.g., Spot, Landsat, etc.) Will be favourably considered, and that the following conditions will apply to any US entity that receives an operating license

Canada's data policy must reduce regulatory barriers to industry, ensure quick technological development and application, and see that constitutional rights of Canadians are respected by this international industry.

From an internal Canadian perspective, we argue that the most effective tool to achieve these goals is through a "Canadian Space Act". There are two advantages to using the legislative procedure to apply policy.

First, the new structure for Radarsat-2 having the Canadian Government as "custodian" of data policy created an ambivalent position for the Canadian government giving it a say on both sides of the supply demand equilibrium. The legislative process gives a procedural security that data policy will be as neutral and open as possible.

Second, an effective legislation would facilitate the obtention of licences for space imagery by other suppliers of space based imagery. This would attract foreign capital investments, and assure a transparent and equal internal application of Canada's international obligations.

NATIONAL SECURITY ISSUES

international security issues are not going to disappear simply because a commercial paradigm is to be applied. Security however need to be defined in commercial terms and resolved through commercial techniques. An example of commercial redefinition of traditionally military concepts is exemplified by the declassification issue. The U.S. government has recently declassified images from espionage satellites. Commercial satellites do not have large image data banks but they probably will in the future. In certain cases a declassification can be defined in commercial terms as a large supply of data being quickly placed on the market where the price does not represent the true cost of the images. From an international commercial point of view this can be considered as "dumping" which is an illegal trade practice.

under the Act.

This is not to say that declassification is wrong in itself. The argument, simply put is that data policies regarding declassification must be sensitive to their possible impact upon the supply-demand equilibrium of market structures.

Furthermore security issues could be redefined as misuse of data. In a commercial paradigm this problem occurs on the consumer side of the equilibrium. An important aspect of the industry is that data sales is a fundamentally interactive process where data suppliers must understand the clients needs to properly serve them. Space based image data suppliers are in an ideal situation to assist in the evaluation the possible security risk of their clients. Perhaps an international register classifying data purchasers with different security levels on an accepted international coding could be established. On this issue UNCOPUOS could be a very useful forum. There are no valid reasons to deprive American industry of valuable Radarsat-2 data by pointing to an obscure possible misuse by some unknown foreign entity. The fear of the unknown must not motivate regulators. The raw data from Radarsat-2 is an important raw material for American industrial development in the data processing sector. American industry can only benefit from Canadian investments in developing Radarsat-2 technology.

In a commercial paradigm, transparency of consumption is a better policy choice than obscurity of supply. This fact reduces the potential misuse factor. A commercial parallel with an established industry illustrates this argument. In this case comparison can be made with the "magna Carta" of the air transport industry, the Chicago Convention where commercial aviation must not be misused as edicted in its Article 4.

Another important security issue being the shutter control principle can also find a parallel in The Chicago Convention. Article 9 of the Chicago Convention edicts the establishment of overflight restrictions for reasons of national security, called "prohibited areas". Imaging could in principle be allowed everywhere. The exception being where objective security issues

are concerned. The Chicago Convention being a Commercial multilateral treaty was able to merge commercial concerns and national security issues in an effective manner on a new technological paradigm.

The case in point as an example of self serving national security definitions was the Gibraltar issue between Spain and the United Kingdom. Spain attempted unsuccessfully to use a national security disposition to achieve political gain in a dispute with the United Kingdom over "the pillars of Hercules". Properly interpreted in the Chicago Convention's national security restrictions must be real and not a pretext to be used in commercial or territorial disputes. This has worked very well in the airline industry we see no reason why it would not work in the space based imaging industry.

The recent Presidential Directive (PDD-23) restricting imaging capabilities to what is commercially available on the world market is another example of conflicting paradigms in rule making. The stated legislative goal of the LRSPA is to promote commercial remote sensing. Yet this presidential Directive states that the U.S. will follow world market leadership. This is an admission that the American remote sensing industry will follow and not lead the technological evolution, a position contrary to the LRSPA goals. This is done in an effort to apply presumed security risks from better resolution imagery. Commercial development is sacrificed for presumed military reasons. The illogical situation here is that in a market driven technological economy civil commercial technology can evolve quicker than military technology. As is argued later in this note a synergy presently exists between military capacity and dual use civil commercial technology for space development.

This is not to say that security issues do not exist with higher resolution space imaging technology. The point is that these security problems should be translated in commercial concepts. In this manner security issues can be

dealt with in a manner that does not hinder commercial market development.

SHUTTER CONTROL

Shutter control in an important commercial and security issue. Recently with U.S. congressional backing the imaging of Israel is to be restricted¹⁸. This Department of Commerce rule has 'languished in the proposal phase for over a year'¹⁹. This new rule should 'incorporate last July's decision by the Dept. Of State and Commerce to bar commercial satellites from imaging Israel at resolutions finer than 2 m.'²⁰ excepting what is routinely available from commercial sources. We argue that limiting shutter control for American (or Canadian) remote sensing businesses of foreign nations is an unacceptable business regulatory structure. First, this type of regulatory disposition sets an unacceptable precedent. Other allies could ask the American government equal treatment. The Israeli precedent would make such a request difficult to refuse. Taken to an extreme American remote sensing firms could be banned from imaging the territory of all U.S. allies. Second, the effect of such a rule is to reduce the commercial operations, of a remote sensing business. Thus, private industry in fact subsidises the security concerns of another country. Granted, the market share loss of 1-m images of Israel might be minimal²¹. Nonetheless, this we argue is simply bad economic planning. A distinction can be made on this issue between the regulatory State and a foreign State. A government can certainly require shutter control for its own security for objective reasons of its nationals conducting space based imagery. In this case a State is requiring that its corporate citizens bear some of the economic costs of national security. This we

argue is acceptable. Nonetheless any shutter control regulations must be very well defined and respect constitutional rights. Valid reasons for implementing shutter control could be drafted describing specific cases, such as: a state of war, UN Chapter VI or Chapter VII actions, operations of self defence (UN Charter Art. 51) or even collective self defence assuring the security of our allies under certain circumstances, humanitarian interventions, military exercises²².

As far as the economic repercussions of the security of a foreign State is concerned the issue can be dealt with in economic concepts. From a commercial point of view a state which would not want it's territory remotely sensed by space assets could contractually agree to compensate the remote sensing satellite operator for restricting its commercial operation. In the case in point, the market share of 1-m images of Israel is minimal, thus, the cost to Israel would be equally minimal. The issue at hand is not weather there should be a shutter control, but rather who should assume the financial burden for such censorship, and what are the procedural rules to implement shutter control? This is applying a market paradigm to the same problem. A military paradigm would simply ban the activity without considerations as to the economic consequences, or procedural fairness.

Opponents of the market paradigm could argue that buying off private space based remote sensing firms could prove to be too onerous and create an artificial financing scheme, pay us or we will image you from

¹⁸ Katherine McIntire Peters, ISSN 00172626, vol. 30 issue 4 p. 12-20, Copyright National Journal Group, Inc. Apr 1998

¹⁹ see Ben Iannotta Setting the Rules for Remote Sensing by, in Aerospace America, April 1999, p. 34.

²⁰ IBIDEM

²¹ 'A company in terms of its market share, is not going to lose anything by not selling 1-m images of Israel. The only market lost would be foreign intelligence agencies' Ben Iannotta,

IBIDEM

²² Addressing this issue Mr. Scott Pace, presented a caveat to the NOAA stating that regulatory vagueness on shutter control could make such regulation vulnerable to legal challenge on First Amendment and other grounds, see Comments on Notice of Proposed Rule-Making for Licensing Private Land Remote-Sensing Space Systems (15CFR Part 960) dated December 2 1997, copy on file with the author. Furthermore the U.S. House of Representatives Committee on Science argued while commenting on Section 960.10 dealing with shutter control, the Act (Land Remote Sensing Policy Act) creates no obligations or authority to condition operations on the basis of international or foreign policies...., that the proposed shutter control regulations could vulnerable in the courts, that no such general authority, exists in the Act or the President's publicly stated policy of March 10 1994...., Op. Cit, note 16,

space. We believe that this argument is at best specious. First, the genie is already out of the bottle. Commercial remote sensing is here to stay and improve, better find a commercial solution now than later. Secondly, within an international market, individual national security regulations will be ineffective. It is a global issue and must be dealt with as such. As ORBIMAGE argued in its comments to the NOAA on these issues no 'amount of federal regulations prevent the acquisition of sensitive data by parties whose intentions may be hostile to the interests of the United States'²³ An international agreement on this issue based on a commercial paradigm would be more effective. Like water seeking the low ground, space system operators and investors will be able to bypass restrictive regulations²⁴.

Furthermore we suggest that the Canadian Space Agency takes the lead in proposing to set up an international trade association for space based image suppliers. Again the air transport industry can serve as a useful model. A constructive relationship has developed between the International Air Transport Association (IATA) a trade association and the International Civil Aviation Organisation (ICAO), the main international regulatory body. IATA effectively represents air transport industry concerns at all government regulatory levels. The space based data industry could benefit from a strong international trade association. Security concerns could be promoted by this association establishing a common perspective between all international participants.

This note argues that the WTO model is better suited than the ICAO model to regulate space data commerce. The principle reason being that the ICAO model functions with bilateral agreements which, we believe, would

be ineffective in the case of space based data technology.

AMERICAN MILITARY POLICY

American military space policy as described in their most recent documents advocate a total control and dominance of outer space²⁵. The problem for Canada with this vision is that military uses of space and civilian commercial uses of space are inextricably linked. One of the tools of military space dominance is therefore necessarily the control of commercial space development. As the former Vice Chairman of the Joints Chief of Staff Admiral William Owens noted;

Today, the centre of technological acceleration in each of these technologies (battlespace awareness, CI, and precision use of force) lies generally in the commercial, non-defence sectors. Our ability to accelerate the fielding of systems, on which we will base our future superiority, thus depends on our capacity to tap into developments taking place for the most part outside existing Department of Defence laboratory and development infrastructure²⁶

Furthermore, the American military is investing considerably in the development of commercial suppliers of space based intelligence data. Space imaging EOSAT's Ikonos, Orbital Image's (Orbimage) OrbView, and EarthWatch's QuickBird will offer 1-m-resolution black and white imagery, which is more than sufficient to meet many of the military's requirements. In fact, all three ventures have received DOD funding to upgrade their systems' data dissemination capabilities.

As part of the National Imagery and Mapping

²⁵See Joint Chiefs of Staff, Concept for Future Joint Operations: Expanding Joint Vision 2010 (1997); See also U.S. Space Command Vision for 2020 (1997)

²⁶See Admiral William A. Owens, The Emerging system of Systems, Proceedings May 1995, at 36; Also cited in Michael N. Schmitt Bellum Americanum; The U.S. View of Twenty-First Century War and its Possible Implications for the Law of Armed Conflict, Michigan Journal of International Law, Vol. 19, No. 4 (1998) p.1051

²³ Letter to Mr Charles Woodridge by ORBIMAGE dated April 2 1998, copy on file with the author.

²⁴ According to Joe Dodd, V.P., Orbimage "...If shutter control is implemented every other Thursday because there's a foreign policy concern off the coast of Slovenia, and a GS-15 calls and says you're shut down for three days, our foreign customers are going to run away from us and go to the French or others' IBIDEM, p. 35

Agency's Commercial Imagery program, they have also received contracts to provide the Pentagon with up to \$100 million worth of imagery through 2003.²⁷

It appears that the development of commercial space imaging is an important aspect of the American military policy advocating space dominance. If this is true then the logical corollary is the impediment of foreign space commercial development through trade restrictions. This would be detrimental to the development of Canadian space imaging capabilities. The problem here is that military policy is being enacted through commercial policy. It is imperative that the Radarsat-2 project not fall into this quagmire.

The commercial paradigm that we propose is the best possible scenario for Radarsat-2. Unfortunately the probability of this model being accepted by our southern neighbours in the short term remains slim at best. Nonetheless it should still remain a long term policy goal of our government. On the short term we suggest an alternate path for Radarsat-2. We argue that the Radarsat-2 project must attempt to tap into this military market. After all the Americans are our closest allies. NORAD could become an important consumer of Radarsat-2 data. This way high tech satellite technology exports to Canada would securely complement the American military need of commercial intelligence data. This Canadian/US and military/civil interoperability must be carefully and securely developed. Furthermore, NORAD could and should play an important role in structuring a joint defence program for Canadian and American space assets. The synergy of a joint defence of Canadian/US space assets is a must. Americans have satellites which are exclusively military. Canada cannot afford this luxury. Radarsat-2 and our telecommunications satellites serve both our civilian and military needs²⁸. The problem is that when a satellite is

used by the military it can become a legitimate target during armed conflict²⁹. According to Gen., Richard Myers, Commander in Chief, North American Aerospace Defence Command (NORAD) 'The commercial satellite industry seems unconcerned in protecting their assets in space³⁰ In making his point Gen. Myers correctly argued 'We (military and commercial) need to work together in achieving our national security interests and your economic commercial interests, and cannot afford to wait until problems arise from this coalition'³¹ Furthermore Gen. Myers stated and this is where a door is opened for Radarsat-2 'A fully integrated framework based on partnership with other DoD and civil agencies, with industry and **with our foreign partners...** We need that framework accomplish a space control mission requiring us to ensure the use of space on our terms.³²

This being said, it is however important to stress that spatial resolution is important but is not necessarily the main security issue when analysing remote sensing capabilities. The resolution argument alone is at best specious. We agree with Lt. Col Larry K. Grundhauser (USAF) who cogently argued that "it is vitally important to move beyond the simplistic notion that spatial resolution is the deciding factor as to whether a particular system may pose a threat to national security. In fact moderate resolution spectral data from multiple sensors may actually present a greater threat than does high-resolution panchromatic imagery alone"³³.As Lt Col.

practical need for military satellites, much less the budget to afford them. As a rule countries (besides the U.S. Russia, and the U.K.) that wish to have a military presence in space will usually opt for dual-use satellites, which carry both military and commercial transponders. See Aerospace America, p. 3

²⁹ see M. Bourbonniere & L. Haeck 'Jus in Bello Spatialis, Space Studies Institute, Proceedings of the XIV Conference on Space Manufacturing, Princeton, N.J. (1999)

³⁰ 'Satellite Spotlight: Military Urges Protection of in-orbit assets, Satellite News, Potomac, Apr 12 1999

³¹ IBIDEM

³² Mobile Satellite News, Potomac, Apr 1999, Vol.11 Issue 8

³³Lt. Col. Larry K. Grundhauser, USAF, Sentinels Rising, Commercial High-Resolution Satellite Imagery and Its Implications for US National Security, Airpower, 1998

²⁷ The Military Satellite Market Industry Insights, June 1999, Aerospace America, http://www.aiaa.org/publications/journals/aa_june99-1.html

²⁸ There simply are few countries in the world that have a

Grundhauser further argues that increased transparency through satellite imagery can do more to maintain peace than aggression³⁴.

We argue that the American military should become a client of Radarsat-2 through NORAD.

This would promote joint Canadian-American military space development. Radarsat-2 gains a secure client to use high resolution images. A right of first refusal could be given to our American friends for certain high resolution multi spectral images, along with a priority of use during times of conflict. Alternatively certain security protocols could be worked out to secure joint national security concerns without causing prejudice to commercial interests. Eventually our European allies could also become clients through NATO. This is a win - win situation, Radarsat-2 gains a client and renewed high tech export rights while American security interests are respected and US space control is enhanced. Space imaging data co-operation between Canada and the U.S. can be a focal point in a post cold war NORAD and an important impetus towards creating a joint capacity to defend our space assets.

³⁴IBID,