QUO VADIS?
Space Law in the 21st Century

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Abstract

Initial space law and policy served to meet the needs of States as they developed their space capability. In the late 50s, 60s and 70s, space served primarily national security needs and international prestige. Accordingly, the space law and policy that evolved was in the form of treaties. Five treaties govern nations' liabilities and responsibilities for space activity, but with minor exceptions, they left the door open for nations to use space as they saw fit.

In the 1980s and 1990s the uses of space shifted away from national security interests and into a commercial venue. With the decline of the Soviet empire and the threat which it posed, national security concerns have significantly lessened and with them the inclination of the U.S. Congress in particular to fund space activity.

The space law and policy of the 1990s and the 21st century must begin to answer the myriad questions posed by the commercial utilization of space. The competition in the future will be economic, between blocks of nations. These regional arrangements will need space law and policy declarations. Individual nations will need to supplement their laws to accommodate and deal with the commercialization of space activity.

Introduction

When looking at the emerging and future supplements to space law, it is profitable to focus on likely developments in addition to what is happening now. This will be a modest attempt to assess current trends and answer the question, where we are going?

The emerging space law both international and national must, of necessity, meet real needs. In order to determine what is needed, it is helpful to look at the broad trends that are occurring. Alvin Toffler articulates in The Third Wave that our society has passed through the first wave of economic change - the agricultural revolution 10,000 years ago. It passed through the second wave - the industrial revolution 300 years ago. Now we are beginning the third

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wave, the emergence of global integrated economies.

It is axiomatic that law follows policy and goals, both internationally and nationally. The world may say it goes into space for admirable motives such as the exploration and use of outer space for peaceful purposes.[1] However, in reality nations go into space for pragmatic reasons such as: national security, international prestige, internal political purposes, commercial profit, scientific knowledge and high adventure.

During the first quarter century nations went into space primarily for the first three reasons. This is reflected in the first four treaties: Outer Space Treaty (1967), Rescue and Return Agreement (1968), Liability Convention (1972) and Registration Convention (1975). Many subjects are dealt with in these treaties. However, the various nations, particularly the developing nations, in determining the texts, considered their security interests and desired to protect themselves from potential threats by the space faring nations.

The space faring nations, especially the U.S. and the USSR, sought international prestige. Political leaders in both these nations found that space endeavors also served internal political goals. President John F. Kennedy challenged the people of the United States to "go to the Moon by the end of the decade." He did this to stir the nation from its lethargy and provide a popular public program. The leaders of the Soviet Union expended considerable assets on space activities, in part, to secure a claim to world power status and to provide "heroes" to legitimize the Soviet regime.

During the last 10 years the space faring nations have chosen to spend less on space, primarily because world tensions have lessened and there is less perceived need for space activity to bolster national security particularly through "National Technical means of Verification" (intelligence satellites). Secondarily, space endeavors have lost some of their glamor. People are not inclined to spend their limited resources there when other needs are more pressing.

Now as we enter the 90's and look to the 21st Century, the primary goal will be commercial profit. A secondary goal will be scientific knowledge, towards the end that profitable spinoff activity will result. If this is so, then the emerging and future supplements to space law will deal with these subjects.

This is not to suggest that the need for international space law experts will lessen. In fact, they are essential. In the past, bargains and compromises were struck between competing political powers i.e., East versus West and developed nations versus developing nations. In the future, the battle will be over economic issues. An example of this change is the Moon Treaty

(1979). This treaty was ratified by only a handful of nations, none of which were space faring nations. The economic impacts were not effectively balanced between the developed nations and the developing nations. An example of a successful balancing of economic interest is in the Remote Sensing Principles passed by the U.N. in 1986.

The Future

In the past, space activity has been paid for by governments. Will this continue?

Alvin Toffler, the author of Future Shock and The Third Wave and Powershift provides insight into the societal effects of space technology and why space projects now lack public support. Many people see technology as forcing them to relinquish a past that they know and are comfortable with. Because space technology involves large projects, is expensive and centralized, it has remained out of the realm and comprehension of ordinary people. They are therefore apprehensive.

Moreover, disadvantaged groups such as minority groups, homeless and the poor, see space as a white male preserve which acts as a competitor for government funding. This is coupled with apprehensive employees who fear that rapid technological advancement may make their current skills obsolete. Compounding the problem are views raised by intellectuals. They are heir to the alienation posed by C.P. Snow of the "skilled barbarian" versus the intellectual. The media looks to the intellectual community for ideas and is influenced by it. They feel threatened as well because the technological advances in communications tend to place their jobs at risk.

Thus Toffler accounts for the declining popularity of space endeavors. He goes on to suggest that the single most important consequence of space technology is the acceleration of economic, political, cultural and social processes. A "real-time" world has significant consequences in widening the gap between the economics of the developed world and the slow paced developing world. Space as a leading technology may produce an even greater gulf between nations.[2]

If this is the blue print for the future, what then are the relative positions of the space faring nations?

U.S. - Mired in Quicksand?

The United States is suffering a malaise in its space program. Philosophical differences between Admiral Truly, NASA Administrator and Vice President Quayle, head of the National Space Council, led to Truly's retirement and replacement by Daniel S. Goldin, formerly with TRW. NASA budgets have been under attack for several years. The funding for Space Station Freedom narrowly survived last year. The vote in the House of Representatives was 240 to 173. The net result was that other NASA programs were reduced.

This year, four Congressmen sent letters to the other members of the House of Representatives urging cancellation of the entire project. They argued that the $2 billion now, $40 billion to build and $120 billion to operate will threaten adequate funding for housing, environmental and basic science programs.[3] This year the House of Representatives voted 237 to 181 to keep Space Station Freedom. It is a cruel fact of political life that the space budget is considered by the same sub committee that has the budget responsibility for these other areas. Future attacks are inevitable.

In April, 1992 at the U.S. Space Foundation Eighth National Space Symposium, the U.S. space program future was discussed.[4] They found that the previous bold new vision of the future had dimmed before the stark realities of the current political and financial environment. It was suggested that four ingredients were essential for a long range plan: vision; available technology; economic will; and an encouraging political environment. There are those who have a vision like Dr. Edward Teller of Livermore Laboratory that sees the current environment as teeming with cooperative opportunities. Further, there is available technology but the economic and political environment are not now conducive to continue massive space projects, much less to begin new ones.

The Office of Technology Assessment (OTA), an analytical arm of the U.S. Congress, prepared a report in July 1991 on Exploring Moon and Mars.[5] It noted that sending humans back to the Moon and on to Mars would be extremely expensive. Moreover, it is far from clear what the U.S. would gain from demonstrating leadership in human exploration. For the next decade, the United States has no effective competitors in sending human missions to the Moon or Mars. If the United States emphasized lunar exploration and failed to fund technologies directly related to the U.S. economy, it might slip in economic competition with other nations.

Dr. Brenda Foreman concludes, "As long as space endeavors remain the preserve of large organizations and government bureaucracies, we will limp into space - if we get there at all - like Marley's ghost, dragging our institutional and psychological chains behind us."[6]

ESA - What Direction?

The European nations embarked on a space program to establish semi-self sufficiency in space endeavors and promote aerospace companies within their respective countries. The European Space Agency (ESA) has a ruling council with representatives from each of the 13 member governments. There had been talk within the European Community of increasing space budgets by as much as 10% annually. This level of expenditure could have vaulted the European space program into a role of world leadership both

in technology and project accomplishment.

Recently, ESA Director General Luton proposed a budget with 5% increases per year for the 1990s. In July, 1992 this was rejected by the governing council. They found the proposal too costly, considering the economic difficulties the various European nations are experiencing. It is expected that in the fall of 1992 a budget, scaled back to 3% per year increase, will be adopted.[7]

What then is the European strategy? The cheapest solution might be to establish ties with the Russian space program. The advantage to this strategy is that Russian space technology is available for less than it costs the Europeans to develop it. Moreover, investment in Russian cooperative joint ventures may be most profitable. Considering the present low wage rates and the growth potential, it would appear to be a natural marriage with European management and marketing skills.

An editorial in "Space News" viewed with alarm that, "The European Space Agency and individual European nations have moved at lightning speed to lend financial aid to struggling Russian space entities in the last few months."[8] The Europeans are building the foundations of a new multilateral relationship that could deliver to Europe, in only a few short years, capabilities that are presently out of their technological and practical economic reach.

Last spring, ESA signed its first contract with a Russian firm. While only for $100,000 it will fund a study to ascertain how Russian components could be utilized on an international space station. ESA's Director for the space station and microgravity program said the step was taken to help reduce costs.[9]

If these efforts are not serious, it may be a brilliant device to gain concessions from the United States. For far too long NASA and other U.S. entities have taken the leadership role and not always pursued "shared goals" with ESA and European countries.

The world is changing and it remains to be seen how the "Russian card" will be played.

Russia - Who's Partner?

From the U.S. perspective, it is easier to change friends than enemies. Several recent events fit like pieces of a jigsaw puzzle revealing the future picture of space activity.

A "Space News" item heralds closer cooperation between NASA and the new Russian Space agency. It goes on to say, "U.S. officials are uneasy with much of the space bureaucracy in the former Soviet Union being transformed into commercial ventures. Intergovernmental cooperation is viewed as ensuring the continued existence of the Russian Space Agency, industry and government officials said." Evidently, they do not want the Russian space industry to

succeed and become a competitor.

Perplexingly, the Bush Administration has stressed that Russia must privatize/commercialize its defense industry. They have gone on to say that before assistance will be given to undergird the Russian economy provided that conversion from military production to commercial endeavors is underway. The U.S. Administration sees no hypocrisy in these conflicting positions.

Former Presidents Reagan[10] and Nixon finally goaded President Bush to start encouraging American investment in Russia. How is this being implemented? According to a U.S. State Department cable to the U.S. Embassy in Moscow, a delegation of 35 U.S. government and industry officials visited Moscow in June/July to assess Russian space technologies.[11] Over the last three years there have been countless trips across the Atlantic by government personnel, industry, scientists and production personnel of both countries. Why another trip? Window dressing. It gives the appearance of activity while maintaining the status quo doing nothing.

Within the last few months the U.S. Administration has given some signs of approving export of an INMARSAT satellite to Russia for launch. Does this mean the door is now open, if only a crack? I do not believe so. The fact that it is an INMARSAT launch is the key. Russia is a member of INMARSAT and it is politically difficult, if not impossible, to continue to deny them an opportunity to bid on a launch contract. The U.S. finally said that it would "consider" a possible export-launch for 1994/1995 or possibly 1996.

A positive sign was the $1M agreement between NASA and the Russian Space Agency for NPO Energia to provide support for a series of small projects. A separate agreement calls for consideration of exchanging astronauts to the MIR space station and a cosmonaut to the Shuttle. These are heralded as major steps, but to put them in perspective, this is not a large sum to the U.S. Government. Moreover, they are government to government, not commercial agreements.

Presumably, serious discussions in Moscow were held by Russian government and industry managers, NASA Administrator Goldin, and Dailey, the new Executive Secretary of the National Space Council. Goldin and Dailey are quoted as now encouraging direct contacts between Russian organizations and U.S. companies. They asserted that previous interagency squabbling had resulted in stalling cooperative efforts.[12]

I am skeptical that joint commercial efforts will now proceed. While the U.S. Administration leadership may now be singing the right words, I do not believe the senior bureaucrats are ready to act. Why is it necessary to do nothing?

Two forces find it not only convenient but necessary to

prevent commercial ties between the U.S. and Russian industry.

The U.S. Department of Defense has not found a new enemy. It is only based upon threats to the nation that there is a requirement for military forces.[13] To convince Congress to appropriate funds, it is necessary to keep this old enemy until a new one can be found.

The natural partners for Russian industry are U.S. Aerospace companies. DoD does not want to declare that Russia is no longer a threat, and therefore, they have discouraged direct relations between U.S. defense contractors and Russian defense/space firms. This has had a chilling effect on U.S. companies who derive their major revenues from DoD. The first rule of entrepreneurship is not to antagonize your primary customer.

The other factor is the reluctance on the part of the aerospace companies to do anything which will promote future competition. Their position is there is already too little commercial space business to permit the Russians to enter the market. Just after returning from Russia, the Executive Secretary of the U.S. National Space Council, Dailey, said, "If the Russian [space] program is able to survive... they can be a formidable competitor, particularly in launch services."[14]

The shrinking business opportunities are exacerbated by the worldwide economic situation and the reductions in U.S. and allied forces. Simply stated, the U.S. aerospace companies are undergoing the effects of a double whammy and they have made a strategic decision not to pursue meaningful business relationships with the Russians. The few exceptions are members of the U.S. aerospace community that have suffered severe declines in revenue and are looking for any solution to greater profitability.

The U.S. Administration's primary emphasis has been to keep Russian space firms from becoming commercial. Interestingly, this dovetails with the cultural bias of the leadership of the Russian space firms. They are accustomed to thinking of themselves as government personnel and not as businessmen. They seek government to government relationships without realizing how involved and drawn out these projects really are usually requiring multi-level authorizations from various departments and seldom producing revenue as each nation contributes its resources, seldom buying from the other. Leaders of Russian space firms trust government relations much more than potential commercial relationships for various reasons.

Of primary importance is their lack of familiarity with micro economics and the costing principles involved with production. When asked what a product or service costs, they are likely to quote the U.S. retail price.[15]

Secondly, Russians are hesitant to select a business partner among competitors. They do not

wish to take entrepreneurial risks; which makes structuring a business agreement for a commercial venture virtually impossible to draft.

Thirdly, the legal structure in Russia has not been firmly established. While there are some new laws in place, administrative rules and enforcing structures are not there to make the laws effective. For example, I offered to provide incentive payments to a group of workers to encourage production of products I was marketing. There were no apparent mechanisms to accomplish this under the current legal structure.

The bottom line is the Russian space firm leaders know that they have to do something because the Russian government does not have the economic ability to continue past funding levels.[16] They know they need to become commercial but frankly do not know how.

Commercial naivete is displayed in conflicting interagency statements on the same day. Yuri Koptev, General Director, Russian Space Agency, said, "Russia will play the same game (launch vehicle contracts) on the same field. There is nothing to be afraid of in this respect." Yet the Deputy General Director, Alexander Lebedev, Krunichev Enterprises, producer of Proton rockets, said, "We can do it (launch) for $56 million, while Ariane charges $85 million".[17]

The Russians do not understand how vehemently the western launch companies will react to the threat of such a price reduction. Making such a public statement on pricing adversely affects their efforts to enter the world launch market. The U.S. Administration in particular, will react to the pressure brought by the U.S. launch companies and forbid export of U.S. satellites to Russia for launch thereby preventing Krunichev Enterprises from obtaining launch contracts.

A third argument was raised by Jerry Grey of AIAA in a June 1992 editorial. He argues that before trade begins, "engineering and economic feasibility, not political motives, should dominate the evaluation of each opportunity." He suggests that U.S. use of the Energia launch system is not practical because the cost per launch is almost the same as a shuttle launch and the payload capacity is about equal due to the high latitude of Baikonur. He questions the reliability of Energia and would prefer investment in new U.S. launch capability. He concluded the decisions should be turned over to industry so politics will not govern the decisions.[18]

A similar view[19] was voiced by Ernesto Vallerani, President of Alenia Spazio, "The technical approach followed by the ex-USSR is quite different from that of western nations, and it is difficult to envisage their hardware being incorporated into ongoing or future western projects."[20]

Trade Restrictions

A candid evaluation of the flap over India's purchase of cryogenic rocket technology from Russia comes from the editor of "Aerospace", published in Singapore for Asian readers. The U.S. imposed an import trade sanction on the Indian Space Research Organization (ISRO) and Glavkosmos. The sanction restricts any import or export of U.S. technology to or from the two agencies.

The editorial notes an element of confusion about the real intent of the bans since the same technology had been offered by a leading U.S. company. The conclusion was, "One thing is clear from the groundswell of opinion which reaches us from various parts of Asia Pacific: By adopting such a high-handed attitude unilaterally on the question of technology transfer, the United States risks losing many potential friends and gaining unnecessary enemies."[21] Moreover, Glavkosmos, offered to permit U.S./international oversightto avoid any inference that the sale violated the Missile Technology Control Regime.

Apparently, in imposing the sanction against ISRO, the U.S. Department of State did not realize the hundreds of millions in contracts with U.S. companies that were placed in jeopardy by their action. A reasonable conclusion is that the U.S. Administration took the action hastily without full consideration of the consequences.

Recently, it appears also that France, under U.S. pressure, is likely to stop supplying rocket technology to ISRO unless India signs the Missile Technology Control Regime, according to Biondeau, head of CNES International Affairs Division.[22] However none of these efforts to date has stopped the transfer of cryogenic rocket technology from proceeding.[23]

Investment in Space

Looking toward the next century, I see less cooperation between nations and more between commercial entities. The worsening economic conditions, at least in the near future, leave governments with less resources to "play with." Only Japan and Germany seem to place any significant priority on establishing long term space programs, despite their current economic difficulties.

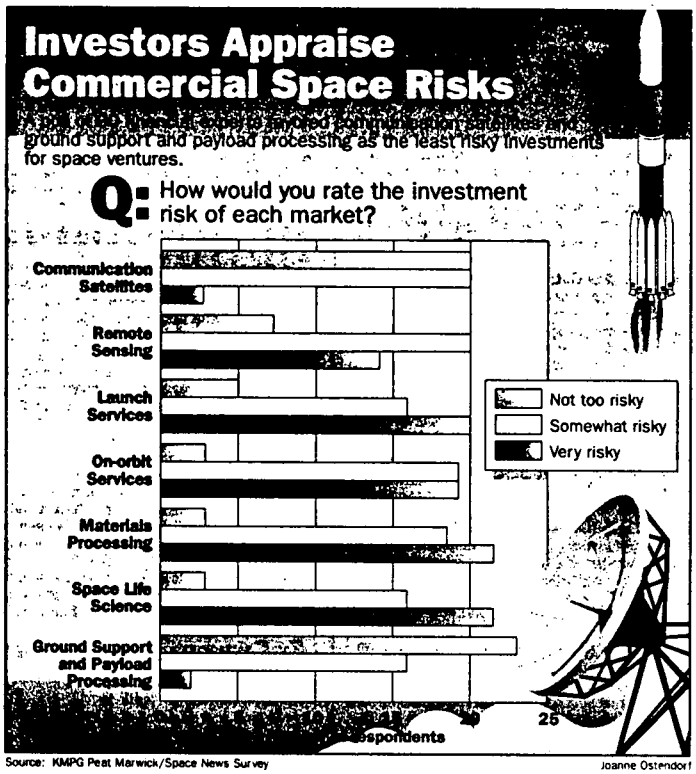
If governments are not going to play a significant role in exploring space technology, will the commercial sector do so? The aerospace companies world wide have been hard hit by the elimination of the arms race. The majority of these companies need substantial reorganization in both management and production facilities, to enter commercial markets successfully.

The cardinal point is whether investors and venture capital markets believe that space enterprises are worth the risks. Investors must weigh four factors:
1) governments establish policy and provide facilities plus expertise;

2) space projects are expensive because of performance, reliability and safety requirements;

3) projects usually take many years before there is financial return; and
4) there are unpredictable levels of technical, market and environmental risk.

An assessment of how investors apprise various commercial risks reveals that most are considered too risky. The historical notion that the financial community needs to learn more about space projects is questionable. On the contrary, we need to learn more about the needs and concerns of potential investors and tailor proposed projects accordingly.[24]



Aside from communications, the only money to be made from space currently comes from governments. Accordingly, governments around the world are in trouble financially. In my view, there will not be significant new space activity for some time to come.

Conclusion

The future then for the space lawyer is to recognize the necessity of laying a favorable legal structure for commercial ventures. Both in the U.S. and in other space faring nations, lawyers need to devise creative legal regimes to encourage space ventures.

Key points to consider:
1) Are there definite legal structures which protect investments and investors?
2) Are there procedures in place to permit evolution of laws and administrative procedures to cope with changing circumstances?
3) Are there exemptions from existing administrative regulations which recognize the unique aspects of space ventures? and;
4) Are there special incentives such as tax moratoriums to encourage investment?

These are the emerging and future requirements in space law. They are needed now to establish the legal structure and climate so that venture capital can seize profitable opportunities as they present themselves.

1. Preamble, Outer Space Treaty, 18 U.S.T., 2410, T.I.A.S. 647, 610 U.N.T.S. 205 (Effective October 10, 1967).

2. Space Times, American Astronautical Society, Vol. 30, No. 3, May-June 1991, p. 3.

3. Space News, July 20-26, 1992, p. 18.

4. Space Watch, U.S. Space Foundation, Vol. 9, No. 5 May 1992, p. 1,13.

5. Report No. 052-003-01250-2.

6. Space Watch, U.S. Space Foundation, Vol. 9, No. 4 April 1992, p. 3.

7. Supra Note, No. 3, p. 1.

8. Space News, April 13-19, 1992, p. 14.

9. Space News, March 30-April 5, 1992, p. 8.

10. In a statement to the House Science, Space and Technology subcommittee, President Reagan said, "Ten years ago, I would have enjoyed a good laugh if someone told me I would be addressing a congressional committee today to support technology trade with the evil empire known to the world then as the Soviet Union." Ibid. p. 2.

11. Ibid. p. 12.

12. Space News, July 27-Aug 9, 1992, p. 3.

13. See, "The Rush to Buy Russian", Aerospace America, AIAA, June 1992, p. 38.

14. Space Fax Daily, Thursday, July 30, 1992, Year 9, No. 1823.

15. It is suggested and not completely facetiously, that if communism were to take over the whole world it would need to leave one capitalist country so they would know what something costs.

16. See the series of articles appearing in Izvestiya reprinted in Interregional Affairs, FBIS-SOV-92-005, January 8, 1992.

17. Supra Note No. 3, p. 3-4.

18. Supra Note No. 13, p. 5.

19. This is in contrast with the ESA Position.

20. Aerospace America, AIAA, Aug. 1992, p. 9.

21. Aerospace, Asian Business Press PTE LTD, June 1992, p. 1.

22. Space Fax Daily, Friday, July 31, 1992, Year 9, No. 1824.

23. Space Fax Daily, Wed. Aug. 5 1992, Year 9, No. 1827.

24. Appeared in Space News, Vol. 3 No. 2, Jan. 13-26, 1992, and is reprinted courtesy of Space News, copyright by Army Times Publishing Company, Springfield, Virginia.