The international trade in launch services : the effects of U.S. laws, policies and practices on its development

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CHAPTER 4

"Free and fair" trade in launch services: requirements and prospects

The primary question to be addressed here may well be: who decides on the content or meaning and the required extent of 'freedom and fairness'? If one believes in the adage "where you stand on the matter depends on where you sit", it makes sense to first have a look at the U.S. (parties') perspective, because of the U.S. authorship of the above expression as well as in view of its strong, if not decisive, role in the establishment of the regulatory framework of the international launch industry. A distinction will be made between, on the one hand, the main industry parties or commercial interests, such as the satellite owners/operators, the satellite manufacturers, the launch providers and the private spaceport operators, and, on the other hand, the regulators and policy makers, *i.e.* the U.S. Administration and Congress. Further, the position of the main non-U.S. launch providers will be reviewed, followed by a brief discussion of possible legal remedies available to U.S. and foreign parties.

4.1 U.S. parties' views and perspectives

4.1.1 U.S. industry

4.1.1.1 Satellite operators

Among the satellite operators one finds *e.g.* international (global) organizations like Intelsat and Inmarsat, regional organizations like Eumetsat or Eutelsat, private international consortia like US-led Iridium, Globalstar or Teledesic, domestic government telecommunications agencies or domestic private satellite companies. They:

1. buy a satellite from a manufacturer and, separately, buy the launch service from a launch company, or
2. buy a satellite-in-orbit from the manufacturer (the manufacturer builds and sells the satellite, *including* transportation into orbit which the manufacturer arranges with the launch company, *or* they

3. lease the whole or part of the transponder capacity of a satellite, orbited by or on behalf of another owner or user, who makes an arrangement as under 1 or 2.

Only in case 1, does the satellite operator find himself in a direct contractual relationship with the launch company. In the other two cases, the performance of the launch company is the concern of others, though obviously the outcome of the latter's negotiations with the launch companies will affect *inter alia* the price the satellite operator has to pay.

The demands, hopes and concerns of these users of launch services do not differ in principle from the users of *e.g.* banking, air transportation or telecommunication services.
They all demand availability, quality at a decent price, performance reliability, predictability of services and related conditions in the future,
they hope for anticipation, thinking along, innovation, on the part of the launch service providers, and
they are concerned about a (possible) lack of the above.

Though one should not totally exclude the possibility that a monopolist transport company whether subsidized or not consistently meets these expectations, there is abundant evidence in economic theory and practice (and in human nature) that competition between transport companies (as between companies in other (service) industries), providing choice for the customers (and thus a risk for the companies concerned to lose those customers) substantially increases the likelihood that the customers' expectations will be met, or at least that efforts to that end will be more consistent and determined. Customers, therefore, in principle prefer competition among their service providers.

Satellite operators contracting for the launch of their satellites will prefer a choice of launch companies to find the optimal mix of quality and price, so they can provide their own customers with, what the latter perceive as, an optimal mix of quality and price.

On the assumption that competition is good for the consumers of the service branch concerned, a satellite operator would not be happy with a - mono - or oligopolistic situation in the launch branch, which may result when
- there are more launch companies, but each of them occupies a specific segment of the market (*e.g.* one GEO launch company, one LEO launch company, one for polar orbit launches, one for heavy satellites, one for small satellites), and/or
- there are more launch companies which, however, do not really compete.

The preferred situation is then: 'real' competition in each segment of the market.

Has that been achieved to the satisfaction of the users in their capacity as direct contract partners with the launch industry? The U.S. satellite manufacturers, the traditional counterparts of the launch industry, may provide some answers. (An additional reason for looking at the manufacturers' position is the blurring of lines between the latter and the satellite (system) operators, with *e.g.* Loral Space and Communications, for 42 percent, co-owning Globalstar, Motorola participating for 25 percent in Iridium and Hughes owning 81 percent of PanAmSat and fully owning its own proposed Spaceway satellite system).

4.1.1.2 Satellite manufacturers

The above expectations of the satellite operators as users of launch services are shared by the manufacturers. And, as, apart from the large satellite owner conglomerates, such as Inmarsat or Iridium, many individual clients will opt for a satellite-in-orbit contract with the satellite manufacturer, the latter has traditionally been, and still is, a major contract partner of the launch companies. The views and actions of the U.S. manufacturers, *inter alia* because of their economic clout and high tech/innovation image, have been and continue to be of vital importance to the development of the launch industry and to the way policy makers and regulators deal with the latter industry. And where, as observed above, there is a growing tendency of manufacturers also to develop or participate in satellite telecommunications services industries and consortia, there is added reason to pay serious attention to the views of this high profile growth industry.

As we saw in the previous chapters, the U.S. manufacturers, and in particular Hughes Space and Communications and Space Systems/Loral, have been very critical in the past decade of the limited availability of launch services.

Because of their unhappiness about quality, performance, consumer orientation, cost, and sophistication of available launchers and also in view of their commercial vulnerability, priority being given at government launch facilities to U.S. government (national security and/or foreign policy) launches, they (1) put pressure on U.S. launch companies to modernize/upgrade their products, (2) put pressure on the U.S. Administration to assist in the development of new launchers through public/private partnerships, NASA/DOD led research and development, and/or 'anchor tenancy', and (3) turned to foreign launch companies: European, Russian, Chinese and, more recently Ukranian. Apparently, Arianespace was not sufficiently available, so the U.S. manufacturers saw with relief China and Russia also offering their launch products (even though it was largely uncharted territory they were entering).

Apart from thus, in principle, having more launch options available, and at - at least initially - substantially lower prices, the manufacturers also

confronted the U.S. launch companies, at a vulnerable stage of their development with low-cost competitors and with additional concerns about their competitive position. This, in the manufacturers' view, had the added advantage of 'jump-starting' U.S. launcher innovation.[1]

But the introduction of *foreign* companies into the game brought also a major handicap, *i.e.* the unavoidable entry into the equation of national security and foreign policy elements in the form of laws, policies and practices, both on the part of the Administration (State Department, Commerce, DOD) and of Congress.

The Administration, as we saw earlier, had, and continues to have, *inter alia* the following national security concerns:
- satellites are defense articles or 'dual use' goods and should in principle not be exported to Russia and China for use or for launch;
- using foreign launchers is indirectly making them more efficient and, where launchers and missiles share the same technology, there is an, at least indirect, proliferatory element involved;
- the use of foreign launchers undermines US companies' competitive position and may affect 'assured access to space', a military-strategic, national security and foreign policy goal of the U.S.

But there were also important national security (*e.g.* non-proliferation) and foreign policy (*e.g.* 'engagement') considerations *favouring* the use of these countries' launch services.

Congressional concerns concentrated on the potential effects on the U.S. industry and related U.S. (regional) economic activity and the ensuing loss of U.S. launch-related jobs on the one hand and on old or more recent 'bad behaviour' on the part of China and Russia on the other hand, with a tendency to punish these countries, or at least not reward them by allowing exports of high tech satellites, and resulting launch revenues, to these countries.

As a result, the U.S. manufacturers' launch contracts with these foreign companies have been subjected to and restricted by 'payload controls' in the form of launch trade agreements, export regulations requiring specific licenses, existing laws which require the Administration to sanction the Chinese and the Russians for various forms of bad behaviour by restricting export of satellites,

1. According to a Hughes official in an October 1998 address, "one of our hopes in launching from countries overseas has been that we could help wake up the American launch industry. They have not been competitive. In the last 15 years, while the cost of satellites has come down by a factor of 30 or more, the cost of U.S. satellite launches has risen", see Michael T. Smith, Chairman and CEO, Hughes Electronics Corporation, *Deregulation: the key to realizing the promise in satellite communications*, luncheon address (Oct 28, 1998) <http://www.hughes.com/speeches/smith/smith_98_10_28_itp.html> hereinafter referred to as Smith Deregulation 1998.

and *ad hoc* Congressional sanctions, usually affecting export of high tech products, including satellites and satellite components to these countries.

In the mean time, *inter alia* as a result of intense and continuous lobbying and pressuring on the part of the manufacturers:
- the launch trade agreements have been progressively liberalized,
- the Administration has made a commitment (in 1996) to terminate these agreements altogether,
- commercial communications satellite export licensing was transferred to Commerce (in 1996), and
- *unilateral* export controls and sanctions received bad publicity as - in many cases - ineffective and damaging to the U.S. industry. As a result, there seems to be a movement in Congress to reconsider the effectiveness of unilateral sanctions as a policy tool.[2]

At the same time, the U.S. launch industry has gone through a major restructuring exercise resulting in a small number of powerful players, 'fit, willing and able' to confront foreign competition.

Additionally, impressive satellite orders from the satellite operators, both incumbent and new (LEO) satellite system operators, and the long term confidence this expansionist and 'up-beat' behaviour of the operators has given to the manufacturing industry, have resulted in turn in a demand on the latter's part for guaranteed future launch capacity. Hughes Space and Communications (and to a lesser extent Space Systems/Loral) has thus been able to play a crucial anchor tenant's role with respect to the development of three new launcher systems, the Delta 3 and the Zenit, both Boeing-led projects and the Japanese H-2A. In all three cases, a sizeable order for future launches created the necessary financial basis and 'official' customer backing necessary to confidently proceed with the launcher manufacturing process and attract other clients, and thus make the new launch product a viable undertaking.

With these 'investment' actions, the manufacturing industry has played an important role in creating more choice of launchers, a more diverse product range and more competition.
But if, in fact, the launch trade agreements are on the way out, *will there be real competition* in each segment of the market to the satisfaction of the manufacturers?

If the answer is affirmative, but only because of *foreign* launcher availability, the question then is whether the present U.S. laws, policies and practices are sufficiently conducive to, or at least not interfering with, the use of foreign launches to make the latter a real alternative for the satellite manufacturers' launch needs. Put more bluntly: do the Administration and Congress assist (or

2. As reported in Smith Deregulation 1998 *supra* note 1.

'back off'!) sufficiently to make the foreign component of competition in all launch market segments work?

This latter question addresses the extent to which the manufacturer may limit his criteria for selecting the launch company to quality, price and schedule only, *whether the launcher is domestic or foreign.*
Secondly it addresses (through the measure of predictability, consistency and efficiency of the government's policies and practices) his reliability vis-à-vis his clients: can for instance Hughes Space and Communications (and its client) count on the agreed execution of the Long March, Proton or Zenit launch of the client's satellite with the same confidence as a competing foreign satellite manufacturer like Aerospatiale or DASA when it concerns the agreed Ariane (or Long March) launch of its client's satellite?
Finally, the above question also concerns the extent to which the U.S. government permits the (further) development of foreign launchers (to be) used by U.S. clients.

In fact, the answer to the question, based on the evidence we have reviewed so far, appears to be: *no*.
First, the export control laws have been liberalized towards China, Russia and Ukraine, but the Export Administration Act and the Arms Export Control Act still cover the export of launch vehicle components and technology, satellites and important satellite components, and, though all commercial satellites were transferred to Commerce for export licensing purposes, this did not remove national security and foreign policy considerations from the licensing process. And the 1998 decision of Congress to - again - put the State Department in charge of this licensing and impose special, restrictive conditions on exports to China, turns back the clock altogether.
These controls in their present form, do affect the reliability and effectiveness of the manufacturer in the latter's deals with its customers.
Secondly, the various 'semi-automatic' sanctions laws, such as the Jackson-Vannick amendment or the Tiananmen-related sanctions do create (potentially competition-distorting) elements of uncertainty and unpredictability in a U.S. satellite manufacturer's 'life of a salesman'.
Thirdly, sanctions spontaneously imposed by Congress on, what one could frivolously call, the 'rogue country of the month' (and/or directed at other interests of a regional-economic, parochial, partisan or even xenophobic nature) are a handicap for the satellite manufacturing industry. The considerable - satellite and launch technology transfer related - Congressional excitement which erupted in May 1998 and the ensuing draft legislation intended to forbid or restrict satellite exports (for launch or use) to China and even to prevent U.S. contributions to the safety and reliability of the Long March - for *inter alia* U.S. satellites! - is a case in point.
Finally existing foreign launch companies continue to be prevented from improving their products through MTCR-based U.S. export restrictions.

In an April 1997 speech, a Hughes official, citing the dramatic (real and projected) growth of civil, military and commercial satellite systems in all orbits, stated that "it is imperative that America increase its access to all types of launch vehicles and to new launch sites."[3]

Hughes saw a major role for the U.S. government in growing global launch vehicle supply, and credited the government for a number of related positive actions in this connection, such as the transfer of commercial satellite export licensing from State to Commerce, which the official believed, would "significantly speed and boost foreign sales."

But he also mentioned several U.S. government policies and practices regarding launch vehicles which "continue[d] to threaten America's supremacy in commercial space."
Under the heading "[a]bolish antiquated technology transfer restrictions", two examples were mentioned. One concerned the delay in the development of the Japanese H2A launch vehicle caused by the State Department holding up, for MTCR-related reasons, the export to Japan of U.S. Thiokol solid rocket boosters. As the same official had stated half a year earlier, "[i]ndustry desperately needs the H2A."[4]
Apart from the Thiokol issue, which had been solved in the meantime, Hughes mentioned a USD 2.4 billion contract with ICO Global Communications of London to build a 12-satellite MEO system for global handheld mobile telephony, "a major win, especially in the face of tough European competition from companies like Aerospatiale, Alenia, DASA and Matra Marconi." But, in stead of celebrating the win, the company now had to "tackle the policies and bureaucracies at Defense, Congress, and State. For example", observed the Hughes official, "the Technical Assistance Agreement we applied for last September still hasn't come through. As a result, our ICO customer can't even attend the design meetings where we discuss how their satellites will interface

3. See John S. Perkins, Vice President, Launch services acquisition, Hughes Space and Communications International, Inc., *Achieving the promise of space by increasing the world's supply of commercial launch vehicles* (Apr 2, 1997)<http://www.hughes.com/speeches/perkins/perkins_97_05_promise.html>, hereinafter referred to as Perkins 1997.

4. See John S. Perkins, *Launch vehicles: keeping the U.S. satellite industry competitive* (Oct 8, 1996) <http://www.hughes.com/speeches/perkins/perkins_10_8_96.html> hereinafter referred to as Perkins launch vehicles 1996. The speaker had earlier explained that the Ariane 4 and the Proton were the only heavy-lift launch vehicles available to Hughes: "With its near-monopoly, Ariane is able to keep its prices high.", and access to Proton was still limited by the launch trade agreements. As for the reasons for needing the H2A, he said: "First, with its heavy-lift capacity, maximum payload lift to GEO would double from about four tons to eight. Second, industry needs Japan's Tanegashima spaceport to relieve our launch facility gridlock. And, finally, the H2A will make the commercial satellite launch market more competitive. By going outside its own country for components to America's Thiokol, in fact Japan can give us a lower cost launch vehicle."

with their launch vehicles." And he ended: "But how likely is it that foreign customers will buy American satellites and launches when our government imposes such stringent controls?"

In that connection, Hughes repeated a plea for full access to all launch vehicles and launch sites and expressed his concern about U.S. policies limiting American access to many foreign launch vehicles, both for technology transfer reasons and to protect the U.S. launch vehicle market: "[a]ll such policies are out of date and counterproductive ... Today, market demand argues loudly against foreign launch vehicle quotas of any kind ... these quotas should be removed immediately."

Where the satellite manufacturer knows that the various policies will not change overnight, if at all, he addresses the domestic offer of launches and launch pads. As for the latter, there is severe criticism of for instance the availability of Cape Canaveral for commercial launches. To quote Hughes again:

"For example, competition for pad time from a growing number of defense and NASA launches. Lack of sufficient launch pad capacity, stemming primarily from too much time spent on pad for each launch. Plus range exercises and Shuttle landings that preclude concurrent launches. Excessive turnaround time. And, most importantly, an immobile site that lacks much-needed flexibility for fuel-efficient equatorial launches as well as launches into inclined orbits ... I was ... surprised to hear ... that the government is contemplating whether to charge industry for the upkeep of launch facilities. Now, it seems, we may be expected to pay for maintaining facilities that not only are inefficient and outdated, but that also disadvantage us by their low throughput and high costs related to their unfavourable location ...

America's ability to compete successfully in the world's fast-growing commercial satellite launch marketplace will depend on how quickly and how appropriately it can adapt to the unprecedented changes already well underway in the global comsat environment. Today, hundreds of new commercial LEO's are being constructed on assembly lines. At Hughes, construction time for our HS 601 model has gone from 36 months to less than 18. What this means is that turnaround time on the launch pad will need to be measured in days rather than weeks. Also, greater versatility in launch sites is a must, so that all orbital planes can be accessed with maximum cost- and fuel-efficiency."[5]

On the *credit* side of the Cape Canaveral ledger, the manufacturer lists, apart from a long and successful history of operations, two factors of a regulatory nature: location in a politically stable country, and for U.S. satellite manufacturers, "a much easier time obtaining export licenses".

5. See Perkins launch vehicles 1996, *supra* note 4, at 1 and 2.

It must be obvious by now that, as a result of the above laws, policies and practices, the preferred situation for the U.S. manufacturer is a full array of competitively priced, 'fit, willing and able' *U.S.* launchers and launch sites to choose from, and available independent from national security and foreign policy-inspired government interference.
As far as launch *sites* in the U.S. is concerned, as we saw in Chapter 1, there is a promising development of, on the one hand, a more private launch industry focused attitude on the part of the Federal launch sites; and, on the other hand, of the establishment of new commercial spaceports primarily competing for commercial launch activities.
Though most of these projects have been and are being (partially) supported, financially or in kind by the USAF and/or NASA and/or state governments, as far as management and launch priorities is concerned they are nevertheless private enterprise-oriented and cater to all clients, both from the private sector, the manufacturers and satellite operators, and from the government, without specific preferences or priorities.
On the other hand, these projects, with the possible exception of Spaceport Florida, are not destined for the use of heavy launchers of the Atlas or Proton type, and therefore for the time being offer only an indirect relief for the users as, once in full operation, they take away other traffic from, and thus create more room at, the government launch sites for GEO launches with heavy launch vehicles.

As for increased choice of domestic launch vehicles in the medium to heavy lift range, one project promises a measure of relief for - also - the commercial launch customers, *i.e.* the government (USAF) paid launch vehicle modernization program called EELV (Evolved Expendable Launch Vehicle).[6]

Hughes, in April 1997, did not see the EELV - which is intended to be the Federal government's only medium-, intermediate and heavy-lift ELV launch system for years to come - "as currently conceived" (*i.e.* before USAF's decision to have two competing launch companies share the contract) as an adequate solution to its launcher needs: "In fact, it could prove detrimental. But there is still time for Washington to re-think the EELV".[7] Apart from asking for (more) assured funding, a quick and steady development, a design and manufacture enabling horizontal processing to minimize on-pad and turn around time, and more launch pads, the Hughes spokesman particularly attacked the plan to use the EELV to *replace* (most) Atlas, Delta and Titan rockets for government launches in the early 2000s:

"Satellite customers who contract with U.S. manufacturers often do so because of our access to such proven launch vehicles as Delta, Atlas, and Titan. By enhancing our large

6. See Chapter 1, *supra*.
7. See Perkins 1997, *supra* note 3.

complement of these existing launch vehicles with the addition of EELV and related infrastructure, we could more quickly launch the world's LEOs, MEOs, and GEOs. This would give U.S. industry an even greater marketing edge".[8]

The demands (or hopes) of the manufacturer are understandable: don't throw away the old ELV's because the more reliable launchers there are available for the launch market, the better it is for the clients (or, at least, don't stop producing the old launchers before the new ones have fully proven themselves). This approach would require parallel developments and continued production of old and new launch vehicles, probably both logistically and financially unrealistic for any length of time. The transition from the current fleet to the evolved version is of course the most risky part of the operation, not only for the Air Force, but for the private customers as well: the latter would be hard hit by the termination of the production of the current launch vehicles if there is not a seamless transition to the new generation of launchers, the more so as, in such a case, pressing national security-driven launch requirements on the part of the governmental customers would probably lead to the latter requisitioning any remaining domestic launch capacity to the detriment of the commercial customers.
Mid-1998 program adjustments appear to largely meet the wishes of Hughes, as far as capacity and flexibility are concerned.
With the original USAF requirements for the three vehicles of each family of launchers in the order of 1.845 kg (small), 3.860 kg (medium/intermediate) and 11.000 kg (heavy), both Boeing and Lockheed Martin planned to produce medium/intermediate launchers with a lift not exceeding about 5.000 kg; this however would not be sufficient to cater for the newest 5.000-6.500 kg commercial satellites being envisaged for production after the year 2000.
Encouraged by the satellite manufactures and driven by the ambitious plans of their foreign competitors (including the Russian and Ukrainian partners they represent (!)) Boeing and Lockheed Martin have in the meantime decided to increase the capacity of their medium, intermediate launchers with (solid-propellant) strap-on motors, to serve adequately this upper end of the commercial market.[9]
Although the heavy-lift vehicle may still be needed for the largest military satellites, and could also be designed to carry a dual load of lighter satellites, the effect of the above intermediate launcher adaption on the need for two competing heavy-lift vehicles (and the reaction of the two companies thereto) is unsure at this stage. But the U.S. satellite manufacturers will feel more comfortable with the revised plans, also because it will reduce their

8. *Id.*
9. See Space News Online (Sep 7, 1998) at 1 ("Firms revise plans for Eelvs/Redesigns could allow for large commercial payloads")
<http://www.spacenews.members/sarch/sarch98/sn0907m.htm>

dependence on foreign-built vehicles (whether marketed by U.S. companies or not).

The program does provide a (long-overdue) modernization to the domestic launch product through a (long-wished) government sponsorship and anchor-tenancy. And it does seem to bring to the manufacturers the preferred situation of real domestic competition in at least the most important segment of the market. But, apart from creating apprehension on the part of the remaining non-subsidized U.S. launch companies (to-be), this government sponsorship also brings government demands and priorities and government dependence which is one of the things the private customers would prefer to stay away from because of the uncertainties it entails.

Foreign launch competition thus continues to be vital for the interests of the U.S. satellite manufacturers. As a consequence, the feasibility of their preferred form of 'free and fair trade in launch services', *i.e.* the freedom to sell satellites and to choose launch providers both within and outside the U.S., will continue to be dependent on the way the U.S. government treats the manufacturers' foreign customers and their foreign launch providers.

4.1.1.3 Launch providers

Not only have the lines between U.S. satellite manufacturers and satellite system operators blurred, also the two remaining major U.S. launch companies, *Boeing* and *Lockheed Martin*, are aerospace conglomerates which also manufacture satellites and participate in satellite systems.

Boeing produced the highly successful Global Positioning System (GPS) satellites for the Air Force, and will take advantage of its experience with that project (encompassing up to 33 satellites including spares, at a potential value of approximately USD 1.3 billion) when it designs and builds (and co-invests in) the new 17 satellite Ellipso global satellite communication system for mobile telephone and data transmission.
Lockheed Martin also produces satellites and has recently acquired Comsat Corporation.

Both companies have an interest in making their launch businesses profitable. At the same time 'their' satellites have to reach orbit within the preferred time frame. This situation creates already a more 'nuanced' attitude vis-à-vis each other and towards their competitors: as manufacturers or operators they may need the services of those same competitors to get their own satellites into orbit, particularly if their EELV launch families become (partly) complementary instead of fully competitive. With the fierceness of domestic competition to some extent mitigated by joint projects such as the co-management of the space shuttle and co-production of the USAF EELV, and

because both Boeing and Lockheed Martin have concluded partnerships with Russian and Ukrainian competitors respectively, serious competition will be primarily limited to the Chinese GWIC's Long March, the European Ariane 5 and the Japanese H2A. These will all be capable of putting tomorrow's heaviest satellites into geostationary transfer orbit (GTO).

As we saw earlier, Hughes' order of Delta 3, Sea Launch Zenit 3 SL and Japanese H2A launchers, and its hopes for a soonest operational status of the Ariane 5, are intended to cover its future launch needs, in particular for the newest generation of bigger and heavier communications satellites, such as the HS 702, weighing up to 5.200 kg/11,464 lb, which is too heavy for the Ariane 4 and for the present Atlas, Delta, Long March and Japanese H2 launch vehicles.
The GTO clients demand heavier lift and, given the importance of that market, they will get the launch vehicles they demand.[10]

The newest and most promising market for all launch providers is that of the LEO satellite constellations. In 1997, both Iridium and Orbcomm began full-scale deployment of their respective systems, with 46 satellites of the 66 Iridium satellites and 8 of the 28 Orbcomm constellation launched. Iridium used six Delta 2 launches for a total of 30 satellites, two Protons for 14 satellites and one Long March for 2 satellites. Orbcomm used its 'mother's' (Orbital Sciences Corporation's) Pegasus launcher. At the end of 1998 both systems had reached full operational status with all satellites functioning in their planned orbits. With hundreds of satellites in the coming years waiting to be launched into LEO orbit, both for initial start-up of the various satellite constellations and to replace satellites which have served out their useful life or malfunction, this is the booming (non-government!) market in which both the heavy-lift launch providers and their light-to-medium-lift vehicle colleagues will be competing.

It is this market which has prompted both the above established launch firms and a number of newcomers to autonomously develop dedicated launch vehicles or to conclude alliances with companies who have those launch vehicles already available. Thus, in the U.S., Orbital Sciences developed the air-launched *Pegasus* for max. 1,000 lb LEO satellites and Lockheed Martin the *Athena 1* (1,760 lb). In the same league, Russia produced the *START* (1,500 lb). And also Kistler and its RLV colleagues will eventually be active in this market.

10. With a (FAA-COMSTAC) scenario of some 25 GEO/GTO and 15 other medium-to-heavy launch vehicle launches per year over the next 12 years, it would be commercially suicidal for the launch providers not to comply, see Ch. 1, (text to) note 3a.

For the medium-sized satellites destined for that orbit, Starsem, sells the Russian *Soyuz* launch vehicle. And the Russian-German joint venture Eurorokot will market the Russian *Rockot* launcher based on an SS-19 missile. Japan and India will be active in this market too (though the latter will continue to be severely hampered in its sales efforts by its strained relations with the U.S.).

The existence of this still relatively modest number of large, medium-sized and small launch providers in the LEO satellite market and the competitive picture resulting therefrom begs the question of the regulatory regime which the U.S. launch companies concerned would like to have applied thereto in the context of 'free and fair trade in international launch services'. Domestically, the gap between the "big two" and (most of) the other U.S. (prospective) launch providers has widened as a result of the generous EELV grants given to the former. The latter are 'not amused'; in testimony before the Senate Committee on Commerce, Science, and Transportation, the following comment was made:

"By funding programs such as the ... (EELV), and threatening to fund a commercial Venture Star, the government is actually impeding progress in the commercial launch industry.

...

The private capital markets perceive EELV and Venture Star as government-funded competitors to any private launch venture. That dries up investment capital for companies such as Kelly Space & Technology, Kistler, Rotary Rocket, Pioneer Rocketplane, and others.

...

The government should not fund development of a new launch vehicle if it is to be used for commercial purposes".[11]

And an editorial in a leading aerospace journal, highly critical of the government's policy to let these major companies compete for government launch service contracts with the small - unsubsidized - U.S. launch companies without taking into account the subsidies awarded to the former, called it

"a declaration of war on the small U.S. companies that are trying independently to develop new commercial boosters ... it looks like the government is trying to run the little guys off the road".[12]

The days of launch quota would seem to be almost over and it will be difficult, with the number, diversity and international character of the launch providers,

11. See Michael S. Kelly, testimony before the Subcommittee on Science, Technology, and Space, Senate Committee on Commerce, Science, and Transportation (Mar 5, 1998).
12. See AW/ST (Jul 20, 1998) at 66 ("Stacking the deck against innovative launch companies").

to establish defensible normative prices which would have to be taken into account when contracting for such LEO launches.
The two large U.S. launch operators, given their solid competitive position, may be expected, in the absence of bilateral launch trade agreements, to raise the issue of 'rules of the road' only if confronted with particularly aggressive sales efforts on the part of the Japanese or of a European-Chinese alliance yet to be established. The smaller players may want to strictly limit the number of missiles-turned-launcher entering the market, whether domestic or foreign owned or - like the large launch operators - prevent foreign competitors (in their 'league') from using cheap, subsidized U.S. launch facilities. But they will not be in a position to demand bilateral constraints of the type that is now slowly on the way out. To the extent the smaller players occupy rewarding and promising niche markets they may be expected to be taken over eventually by the established major aerospace firms.

The U.S. launch firms are well-positioned to take advantage of the present international and domestic regulatory environment governing the trade in launch services. Their only problem at this stage would appear to be the way Congress views the national security aspects of their alliances with foreign launch providers (*e.g.* Sea Launch) and the strict controls the Administration, as a consequence, has been forced to apply thereto.

4.1.1.4 Spaceport operators

Government launch sites or spaceports have - traditionally - been primarily oriented towards government needs and government priorities.
When - during the ELV commercialization drive of the mid-1980s - they were made available to private launch providers, DOT was able to slowly increase the private enterprise focus of the two government launch site operators, NASA and DOD. However, where the government *pricing* policy was a generous one, with only incremental costs charged to the new users, the government agencies operating the launch sites continued to put a higher priority on 'their' (often) national security and foreign policy driven launches than on meeting the expectations of the private customers which they were asked (in the absence of private spaceports) to accommodate as well.

This somewhat uncomfortable dual government role, the governmental launch site monopoly and the increasing needs of the launch service providers caused by the substantial growth (forecasts) of the satellite launch market all combined to give the impetus to private spaceport development initiatives in the U.S. and/or by U.S. interests abroad. (The Cape York project involving a U.S. managed Australian launch base for Russian Proton launches was probably the first such move of a U.S. firm, but its background was not so much unhappiness with the available U.S. launch sites or with the launch priorities of the government agencies concerned, but rather the lack of sufficient launch

providers and the wish of Australia to be involved in the launch business, joined by Russians looking for a non-Russian launch site to avoid or mitigate U.S. export restrictions)
The Commercial Space Launch Act of 1984 foresaw and provided for this development, and, as we saw in Chapter 1, DOT in the mean time has issued commercial launch operator's licenses to the operators of four such spaceports as required by that Act.

Although from the point of view of an optimal use of available resources one may wonder whether a combined government/private customer base would not be preferable, a separation of launch pads avoids the complications of an operator trying to please two masters with different requirements and priorities, and is, apparently, as unavoidable as the separate existence of military airbases and commercial airports.

Commercially operated private U.S. spaceports (will) have a straightforward and simple mission: to become (and remain) profitable and provide shareholders value, which means attracting as many U.S. *and foreign* launch companies as possible.
Understandably, the U.S. spaceports are the U.S. launch companies' natural allies when it comes to preventing, or at least limiting, launches of U.S. satellites by foreign companies from foreign launch sites (at least in so far as the U.S. launch firms concerned do not have a financial stake in their respective foreign competitors).
But the U.S. launch companies will be less than happy with a situation where they compete with foreign launch providers which, by using *U.S.* commercial spaceports, have levelled the playing field to an uncomfortable extent.

Orbital Sciences Corporation (OSC) in the past has objected to foreign, *i.e.* Israeli, use of U.S. spaceports because this would amount to U.S. tax payers (through the Federal support of the government launch site involved) assisting foreigners in competing with U.S. launch companies.[13]
Obviously the U.S. government has the freedom to approve or disapprove, for national security, foreign policy or other (budgetary/federal support) reasons, this foreign use of its own launch sites. But the government's arguments for rejecting foreign use of *private* spaceports will have to be of a different nature

13. See 8 Space News (Feb 17-23, 1997) at 1 ("Israel spurs policy debate with bid for U.S. launches"). As the FAA-AST notes in a 1997 report on newly emerging space nations, "[c]urrent United States law calls for commercial users to pay only the marginal cost of [US] launch ranges. The rest of the expense of maintaining these sites is borne by the taxpayer and ultimately, in part, by commercial entities like OSC. Foreign users would not bear these additional expenses.", see *The worldwide growth of launch vehicle technology and services*, Special Report, 2nd Quarter 1997 Report, [DOT-FAA-AST], hereinafter referred to as AST Special Report 1997 <http://www.ast.faa.gov/bulletin/quarterly/9702/special.html>.

and will not fail to draw sharp reactions from the 'client-starved' spaceports concerned (whose FAA licences do not address the nationality of the - potential - users).[14]
One may anyhow expect the private spaceports to vigorously defend their case as a logical consequence of their version of 'free and fair trade' in launch services.

4.1.2 U.S. Government

4.1.2.1 Administration

The U.S. administration is both a regulator and a customer of the U.S. launch industry's services. That dual role creates diverging and sometimes conflicting interests.
A U.S. government agency acting as a customer will share most of the above expectations of the manufacturers and operators. When it comes to flexibility of the launch provider they will even be more demanding than the commercial customer. A sudden regional conflict, disaster or activity of a military, national security or foreign policy related nature (*e.g.* Tsjernobyl, Gulf war, Indian nuclear tests, Kosovo etc.) may require the immediate launching of additional remote sensing, intelligence and other communications satellites. The government's launch services demands, both planned (long term), and *ad hoc* (short term), have to be met by the space shuttle, DOD's own launch vehicles and the private sector. With the current and projected shortages of heavy-lift launch vehicles, which the government needs for its various GEO satellites, it shares the above parties' concerns about the availability of efficient, low-cost launch capability, and it has one additional handicap, *i.e.* the self-imposed obligation to only use U.S.-built launch vehicles and the 1998 Commercial Space Act's insistence on the use of U.S. operators.
As a customer the government believes in competition, both domestic and foreign, to get the required quality at a decent price and all the other benefits brought about by free trade.
But the ultimate consequence of free trade and free competition, *i.e.* the survival of the fittest producer(s), is only acceptable to the U.S. if *a* U.S. launch industry belongs to the survivors. This is the consequence of another role of the administration, *i.e.* that of the guardian of national security. The

14. According to the FAA-AST, groups concerned with the Florida Spaceport have pushed for both Shavit and Proton launches from Florida in the hope of raising the number of launches from Florida sites, see above AST Special Report 1997, at 3. They could refer to the agreement signed between Russia's STC Complex with SpacePort Canada which provided for launches of the former's Start launchers from a new spaceport in Churchill, Manitoba, see *ibid.* (The difference with the US situation is off course that Canada does not have an indigenous launch industry that could be threatened by the Start operations).

latter role requires assured access to space, which means access controlled by the U.S. and thus provided by government entities and/or U.S. citizens. The U.S. launch companies are an established part of and play a crucial role in providing this assured access to space. That limits the government's application of traditional economic concepts to this industry. Yes, the launch companies should not have a monopoly. They should be subject to the rigors of the market to keep them on their toes, quality and cost/price-wise. In that connection, Arianespace is, as such, a welcome competitor, and so are the launch providers from Russia, China and Ukraine. Up to a point. The U.S. domestic launch industry's existence should not be seriously threatened, because assured access to space should not be compromised. Hence the launch trade agreements' quotas and price conditions.

The 'coming of age' of the U.S. launch industry in the past few years, the result of a combination of (government and private, domestic and international) customer demands, competition from Arianespace and the other foreign launch providers, and industry consolidation, has given the government sufficient confidence in the continuity of the private launch companies to yield to various pressures (from the foreign countries concerned, from the satellite manufacturers and from the U.S. launch companies which teamed up with affected foreign launch providers to jointly sell the latter's products) to liberalize and, at the beginning of the next century, not to renew the agreements in their present restrictive form. The two private U.S. companies on which the administration now relies for (part of) its launch needs, Lockheed Martin and Boeing, are both high tech aerospace conglomerates of such strength and financial resilience that they can be trusted to be and remain fit, willing and able to compete with the foreign launch companies and continue to provide assured access to space to the U.S. government. Their joint activities for the government, both as operational managers of the Space Shuttle (the United Space Alliance) for NASA and as EELV developers/manufacturers for the Air Force, combined with their assured government launch business under the 'fly U.S.' policy, further strengthen their position and make the U.S. government's steps towards a liberal launch trade regime both philosophically right and commercially and strategically (practically) risk-free. An additional reason for the administration to feel reasonably relaxed about the consequences of this liberalization is the existence of the U.S.-Russian and U.S.-Ukrainian launch alliances which, as long as they last, channel part of the benefits of liberalization back to the U.S.

What remains for the U.S. administration to decide on as a regulator is the regime that should produce or induce 'fair trade' behaviour on the part of the above countries' launch providers after the termination of the agreements. Little is known about the work that has been done so far by USTR, the State Department, Commerce, DOT and the White House OSTP on the matter. One must assume that the principles that should be adhered to will not be materially different from those already embodied in the launch trade agreements and

discussed in the respective paragraphs. (The 'big sticks' to enforce adherence will remain the Trade Act and, though not meant for that purpose and therefore ultimately counter-productive, the export control legislation.)

The problem at this stage is probably one of a more domestic nature, *i.e.* the sharpened awareness of Congress of the various issues involved (U.S. satellite and launch know how and non-proliferation, U.S. jobs, the export regulatory roles of State versus Commerce, and the influence of the manufacturers on the administration's policy making in this area) in the wake of the May 1998 China affair discussed earlier (and further explored hereafter). As a result of the sometimes heated and, at least partially, partisan discussions on the advisability of having U.S. satellites launched by the Chinese, there will likely be little or no progress on the matter of the post-launch trade agreements regulatory regime for some time to come.

4.1.2.2 The U.S. GATS approach

This leaves the relations with Europe to be dealt with in a way which produces or does not prevent a 'free and fair trade' in launch services. Apart from bilateral 'rules of the road' discussed earlier, the possibility of liberalization of launch services through the General Agreement on Trade in Services (*GATS*) has been envisaged in the past.

GATS is a set of multilateral, legally-enforceable rules covering international trade in services. It was negotiated during the Uruguay Round of world trade negotiations (1986-1994). The Uruguay Round led to the creation of the World Trade Organization (WTO), an intergovernmental organization which aims at free(er) world trade. Another result of the Uruguay Round was a set of agreements, *viz.* the Multilateral Agreements on Trade in Goods (which includes the GATT and other agreements such as those on agriculture, textiles, subsidies etc.), the above GATS and the Agreement on Trade-Related Intellectual Property Rights (TRIPS). Apart from those agreements, to which all WTO members are parties, there exists a separate set of 4 agreements to which *not* all WTO members are parties, *i.e.* the so-called Plurilateral Trade Agreements; one of these latter agreements is the *Agreement on Government Procurement.*

GATS covers all service sectors and services. The Agreement operates on three levels: the main text containing general principles and obligations; annexes dealing with rules for specific sectors; and individual countries' specific commitments to provide access to their markets.

The main principles of the Agreement include (but are not limited to):
- *Most-Favoured-Nation* (MFN) treatment, which means treating one's trade partners equally. In other words, if a country allows foreign competition in

a sector, equal opportunities in that sector should be given to service providers from all other WTO members. This applies even if the country has made no specific commitment to provide foreign companies access to its markets. MFN applies to all services, but WTO members have been allowed, be it only once (at the time of the GATS finalization), to list specific exemptions to the principle vis-à-vis certain (groups of) trade partners; these exemptions are temporary: they will be reviewed after five years (in 2000) and will normally last no more than 10 years.The exemption lists are part of the GATS agreement.
- *national treatment*, giving foreign service providers the same treatment as one's own national service providers, is only applicable (in GATS) where a country has made a specific commitment to provide access to its own market. Exceptions to *c.q.* limitations of the principle are allowed.
(Other principles require for example that governments must publish all relevant laws and regulations and that these regulations be objective and reasonable).

Individual countries' commitments to open markets in specific service sectors are the result of multilateral negotiations (which will often include, or be preceded by, bilateral talks on specific conditions). The commitments, once agreed upon, are listed in so-called "schedules", which contain also the exceptions and limitations to the market access thus granted.

After the U.S. government, in 1996, had deregulated the domestic telecommunications market for U.S. telecommunications providers ('carriers'), it started to push for adoption of the same pro-competitive principles in the international telecommunications market. The worldwide acceptance of these principles through a WTO agreement would on the one hand open up the U.S. (satellite) telecommunications market to foreign operators, and thus expand choices, stimulate innovation and lower prices for the benefit of the U.S. consumers; it would on the other hand open protected foreign domestic markets to eager U.S. telecommunications and satellite industries.

When, on February 15, 1997, the U.S. and 68 other countries, together representing more than 90 percent of the $600 billion global telecommunications market did reach agreement on the opening of this market, this *WTO Agreement on Basic Telecommunications Services* (WTO Basic Telecom Agreement) was greeted as a victory of the principles of free competition, fair rules and effective enforcement as enacted in the above U.S. Telecommunications Act of 1996.[15]

15. See statement of FCC Chairman Reed Hundt concerning WTO agreement on telecom services (Feb 15, 1997) <http://www.fcc.gov/Speeches/Hundt/st021597.html> The FCC, in November 1997, adopted new rules to liberalize market access for foreign telecommunications providers, incl. in particular foreign satellite systems licensed by WTO

The WTO Basic Telecom Agreement entered into force on February 5, 1998 for, *inter alia* the U.S. , the European Communities (and the individual member states), Japan, India, Brazil and Israel.[16]
The momentum created by the agreement has also led to the development of the so-called Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding (MoU) and Arrangements, designed to ensure that terminals associated with GMPCS systems will be able to transit borders and "roam" freely. At the end of 1998, more than 100 administrations and industry members had already signed the MoU.[17]

The ensuing liberalization of global telecommunications through the opening of national markets to international competition has gone hand in hand with a convergence of domestic telecommunications companies with those of other nations to form multinational alliances, in order to enlist additional capabilities, create synergies and share the risks and - huge - costs involved.

The result of this regulatory and strategic revolution is a phenomenal growth of the global telecommunications industry (with a strong U.S. presence), an increasing need for sophisticated and reliable communications satellite systems and - unavoidably - *a corresponding requirement for sufficient, reliable, decently-priced, on-time transportation services to get the satellites into their proper orbits.*

Which brings us to the - possible - application of the above GATS principles to the trade in launch services.
First, in the *absence* of a specific commitment to provide foreign launch companies access to its satellite launch market, the U.S. will still be bound by the MFN principle.

members, consistent with the U.S. commitments in the above WTO agreement, see *Commission liberalizes foreign participation in the U.S. telecommunications market* (IB Docket Nos. 97-142 and 95-22), Report No. IN 97-36 (Nov 25, 1997) and *Commission adopts procompetitive market opening policies for foreign satellites* (IB Docket 97-111, CC Docket 93-23), Report No. IN 97-37 (According to the latter doc, in Feb 1997, the U.S. and 49 other nations made binding commitments in the WTO Basic Telecom Agreement to open satellite markets to competition) <http://www.fcc.gov/Bureaus/International/News_Releases/1997/nrin7041and 7042.html>.
The two above FCC orders entered into force in early Feb 1998.

16. See for text <http://www.wto.org/wto/services/tel2.htm>. And see Schedules of Commitments and Lists of Article II Exemptions to be annexed to the Fourth Protocol of the General Agreement on Trade in Services (Jan 29, 1998)<http://www.wto.org/new/gbtoff.htm>. Fourth Protocol to GATS, 33 ILM 1167 (1994).
17. See <http://dettifos.fcc.gov:8080/beta/doc-search/opasrchV2.cgi>. And see FCC News, *International Bureau reports on developments in international telecommunications markets*, Report no. IN 98-58 (Nov 19, 1998) <http://www.fcc.gov/Bureaus/International/News_Releases/ 1998/nrin8041.txt>.

This provides the WTO members' launch companies with equal opportunities to offer their services in the U.S. launch market. "Equal" is to be read here as equally good or equally bad.
MFN thus obliges the U.S. government to treat the launch companies of WTO members India, Israel and Japan in the same way as Arianespace *or vice versa*. A launch trade agreement concluded with any one of these WTO members would not stand if it meant a less favourable treatment of the respective member as compared to the other WTO members; conversely, it would have to be extended to all other WTO members if considered more favourable than the treatment the latter were accustomed to.

MFN also means that, if non-WTO members such as China, Russia or Ukraine receive a better U.S. treatment - in the sense of more opportunities to offer their launch services in the U.S. market - than a WTO member, *e.g.* India, the latter may claim the same better treatment from the U.S.
And, finally, China, Russia and Ukraine, in view of their non-membership at present lacking the legal means to invoke the MFN principle vis-à-vis the U.S., would, upon becoming a member, be able to benefit from this GATS principle and expect equal opportunities in the U.S. launch market.

In 1994, the above, seen in the context of the existing launch trade agreements with the latter three countries and possibly in view of similar agreements the U.S. may have envisaged concluding with the European Union and Japan, was sufficient reason for the U.S. government to make an MFN exemption for "space transportation".
In its filing, the U.S. government referred to the quota and price restrictions embodied in - unspecified, *i.e.* also future - bilateral launch trade agreements and, as to the condition creating the need for the exemption, mentioned the "need to prevent disruption of competition in the international space launch market".[18]

The U.S. thus made clear that it wished to remain free to discriminate in this field between its trade partners, in this case between WTO and non-WTO members. As the MFN exemption was clearly meant to maintain the validity of the launch trade agreements with the latter, the MFN treatment of the former, with whom no launch trade agreements had been concluded, remained unaffected.

18. The U.S. filed an exemption for "Transport Services; Space Transportation", and, under the heading "Description of measure indicating its inconsistency with Article II' described its launch trade agreements as "[q]uantitative restrictions and price disciplines in certain bilateral agreements on the launch of satellites in the international commercial space launch market", see Final List of Article II (MFN) Exemptions (U.S.) (Apr 15, 1994). Europe did not take an MFN exemption because, as we saw earlier, it had not formalized its launch trade agreement with Russia. Japan, as a matter of principle, did not take a MFN exemption either, info Eur. Commission, DG I (Dec 11, 1998).

Before one concludes that India is entitled to demand the same treatment as Arianespace and Japan in the U.S. market, it should be realized that the GATS provides for a *security exception* which the U.S. could - and probably would - invoke in case of such a demand (or complaint).[19]
In the past, the GATT/GATS panels have been treating this exception with caution, generally retreating whenever it was invoked.

Secondly, for France/Arianespace to be able to invoke *e.g.* the *national treatment* principle, an explicit commitment on the part of the U.S. to provide foreign access to its launch market would be required.

Such a commitment would provide equal access to the U.S. market for all WTO members with launch companies, automatically including new WTO members: thus, if China would join WTO, the then existing commitment would apply and override the MFN exemption and the more restrictive arrangements which that exemption covers.
An additional benefit of *national treatment* would be the - possible - availability of high quality U.S. spaceports, both federal and private ones, to all respective foreign launch companies. This would be of particular interest to WTO members with launch capabilities but limited ground facilities, such as Israel and Japan. It must be assumed, however, that the U.S. would hesitate opening up the subsidized federal launch sites to foreign competitors, and would phrase its commitment accordingly.

During the Uruguay Round, the European Union, in bilateral discussions with the U.S., raised the issue of liberalization of commercial space launch services through the application of GATS, and suggested that the U.S. (and of course also Europe and the other space launching countries) make a commitment as referred to above. The U.S. reaction was far from enthusiastic, reportedly because the U.S., *inter alia,* felt uneasy about the effect their commitment and the ensuing application of all GATS general principles and specific provisions would have on their position with respect to the policy of reserving the government market for U.S. launch providers ('fly U.S.' policy).

19. See GATS, art. XIV bis ("Security exemptions"): 1. "Nothing in this Agreement shall be construed:
(a) to require any Member to furnish any information, the disclosure of which it considers contrary to its essential security interests; or
(b) to prevent any Member from taking any action which it considers necessary for the protection of its essential security interests: (i) relating to the supply of services as carried out directly or indirectly for the purpose of provisioning a military establishment; (ii) relating to fissionable and fusionable materials or the materials from which they are derived; (iii) taken in time of war or other emergency in international relations; or
(c) to prevent any Member from taking any action in pursuance of its obligations under the United Nations Charter for the maintenance of international peace and security. 2 ...". GATS text at <http:www.wto.org/wto/services/gatsintr.htm>.

This may or may not be a valid worry; the fact is that the GATS Agreement specifically provides that the provisions on MFN, market access commitments and national treatment do *not* apply to "government procurement".[20]
(In fact, government procurement has always been omitted from the scope of the GATT, but was dealt with in separate agreements with effect from 1981.)
In parallel with the Uruguay Round discussions, talks on this issue took place as well, and resulted in a separate plurilateral *Agreement on Government Procurement* of 1994 (GPA) which entered into force on January 1, 1996 for *inter alia* the U.S., the European Community and its (15) individual member states, Japan, Israel and about 10 other WTO members.[21]

As a consequence, for the U.S., the national treatment and non-discrimination principles to be found in art. III of the GPA, apply to - in principle - all U.S. government agencies' procurements. The "core" provision reads as follows:

"1. With respect to all laws, regulations, procedures and practices regarding government procurement covered by this Agreement, each Party shall provide immediately and unconditionally to the products, services and suppliers of other Parties offering products or services of the Parties, treatment no less favourable than:
(a) that accorded to domestic products, services and suppliers; and
(b) that accorded to products, services and suppliers of any other Party."[22]

Among the many government agencies which have been listed by the U.S. as entities which procure in accordance with the provisions of the GPA, both NASA and DOD are mentioned.[23]

20. See art. XIII: "1. Articles II, XVI and XVII shall not apply to laws, regulations or rquirements governing the procurement by governmental agencies of services purchased for governmental purposes and not with a view to commercial resale or with a view to use in the supply of services for commercial sale.
2. There shall be multilateral negotiations on government procurement in services under this Agreement within two years from the date of entry into force of the WTO Agreement".
21. For the text of the Agreement, see WTO, Government Procurement <http://www.wto.org/wto/govt/agreem.htm> hereinafter referred to as WTO government procurement. In the U.S., the Uruguay Round Agreements Act (Pub. L. 103-465, 19 U.S.C. Sec.3501 et seq.), through amendments to the Trade Agreements Act (TAA) of 1979 (19 U.S.C. Sec. 2511 et seq.), authorizes the President to implement US obligations under the GPA. As a consequence, a number of laws and regulations, e.g. the Federal Acquisition Regulation (48 CFR parts 1-99) have been amended to implement the GPA principles, see *Notification of national implementating legislation*, communication from the US, WTO, Committee on government procurement, GPA/23 (Jul 15, 1998), hereinafter referred to as US GPA notification.
22. See WTO government procurement, *supra* note 21 Para. 2 of the same art. requires the same treatment for locally-established suppliers irrespective of the degree of their foreign affiliation or ownership or the country of production of the good or service.
23. See US GPA notification, *supra* note 21, Appendix 1, Annex 1 ("Central government entities which procure in accordance with the provisions of this Agreement"), GPA/LLS/1 (May 15, 1998).

However, the U.S. has explicitly excluded from the application of the Agreement:

"[a]ll transportation services, including Launching Services".[24]

The "fly U.S." laws, policies and practices of the U.S. government are thus not affected by the above Agreement on Government Procurement. Similarly, neither the European Commission nor Israel nor Japan have included launch services in their lists of services for GPA application.[25]

As the U.S. government showed no inclination whatsoever to either reconsider the exclusion of launch services from the GPA, or to make a GATS commitment with respect to access to its commercial (non-governmental) launch market or to withdraw its GATS MFN exemption, the EU did not pursue the matter. (ESA/Arianespace, for whose benefit the EU initiative was taken, was of course primarily interested in the 'fly U.S.' part of the story).

What then are the implications of the above for the prospects for a free and fair trade in launch services?

After the U.S. launch trade agreements with China, Russia and Ukraine have lapsed, the question remains whether the U.S. wants to grant these countries' launch companies access to the U.S. commercial non-government launch market to the same extent as - traditionally - provided to Arianespace. There are two reasons why this is an unlikely scenario: first, because of the non-market economy 'label' of the countries concerned, the U.S. is less than confident in their 'fair market behaviour'. Secondly, the national security element continues to play a very important role in the U.S. (trade-)relations with these countries and requires specific (*ad hoc*) controls to which the European trade partners do not have to be subjected. This will remain so even after the present Congressional excitement about the security aspects of Chinese launches (of U.S. satellites) has subsided.
This makes any general liberalization of launch services through a U.S. GATS commitment unlikely for some years to come for WTO membership of the three countries concerned would then in principle open the U.S. market to these countries in a way comparable to Europe's access. And, on the European side, it would add a number of important GATS principles but no additional markets, such as the government market Arianespace is after.

24. See *id*, Appendix 1, Annex 4 ("Services")(the transport services concerned are further identified as Central Product Classification Categories (CPC) 71, 72, 73, 74, 8859, 8868, Universal List of Services, doc. MTN.GNS/W/120), GPA/LLS/1 (May 15, 1998); a note extends this exclusion to "[t]ransportation services, where incidental to a contract for the procurement of supplies".
25. See WTO doc GPA/W/35 (Feb 5, 1997) ("Loose-leaf system for the appendices to the Agreement") at EC, Japan and Israel, Annex 4 respectively.

Europe/ESA/Arianespace's wish to have access to the U.S. government launch market is also unlikely to be met through withdrawal of the U.S. 'launching services' exclusion from the GPA. As we have seen, the U.S. government (both Administration and Congress) and the launch companies attach great importance to 'fly U.S.' for national security, economic (jobs!) and commercial reasons. This in itself is already sufficient justification for the U.S. to keep the *status quo*. Additionally, the corresponding full availability of the European government market is of much more limited commercial value for U.S. launch companies and therefore provides little incentive for agreement on mutual access.

One may conclude at this stage that - in the absence of specific developments or initiatives - liberalization of the trade in launch services through the GATS/GPA mechanism is unlikely to materialize for some time to come as it provides the main player in the game, the U.S., with few benefits which could compensate for the ensuing loss of the national security and commercial controls they are now able to exercise in this field.

A final word on the Administration's attitude towards new non-U.S. entrants. There appears to be no intention whatsoever on the part of the Administration to lower the technological threshold to entry of the launch market by relaxing the MTCR controls on the export of launcher technology. As we have seen in the cases of Brazil and Japan, even membership of the MTCR group does not imply (increased) access to the technology required to create or improve an indigenous launch capability. U.S. and international MTCR controls are credited (by the Administration) with having slowed down the development of launch industries in India, Israel and Brazil. The reasons for this policy have been discussed. The effect thereof is that the number of 'players' will not increase until either the U.S. or other MTCR members relax their controls or, alternatively, until launcher technology has been so popularized that the controls have become ineffective. One could imagine the latter to happen in connection with a further increase in the use of small, further miniaturized LEO satellites requiring small launchers for initial launch and replacement purposes. The economies of such an endeavour would however remain doubtful as long as sufficient operators are available and satellite export controls can be used to deny a new operator the payloads for his launcher.

The concept of 'free and fair trade' in international launch services, in the U.S. Administration's view, clearly applies to the current, conveniently small, 'stable' of domestic and foreign launch providers for years to come.[26]

26. A re-emergence of the space shuttle as a commercial player has been briefly considered recently, but the idea was shelved, and, in the light of the history of the ELV development as discussed above, quite rightly so (unless the shuttle is totally privatized). For the same reason, a sizeable (commercial) use of converted missiles by the U.S. government is not to

4.1.2.3 Congress

Both the House of Representatives and the Senate have, through the years, paid serious and constructive attention to the development of the U.S. private commercial launch industry.
The Committees and Subcommittees dealing with space matters have repeatedly reviewed the various domestic and international aspects of the launching business, and, through hearings at various stages of the industry's development, have collected (and challenged) the views of the government agencies concerned and of (other) experts from the industry, in order to put their mandated or voluntary stamp on laws, policies and practices which, domestically, have an effect on jobs and the economy and internationally involve countries and entities which may already have attracted Congressional attention for other reasons.
The Arms Export Control Act prescribes which export license applications submitted to the State Department require Congressional notification for possible (dis-)approval. The Tiananmen crackdown brought Congressional sanction legislation which continues to require the U.S. President to notify Congress in each individual case that he waives, in the national interest, the prohibition to export U.S.-built satellites to China for the purpose of launching.
Congress supported the launch industry by creating legislation to formalize the DOT's responsibilities with respect to the regulation and supervision of the launch companies (the Commercial Space Launch Act of 1984) and to limit liability of the industry vis-à-vis the government and third parties (the 1988 amendments to that Act). Moreover it created additional government (NASA) business for the launch industry through the adoption of the Launch Services Purchase Act of 1990. And, finally, in July 1998, Congress approved a new Commercial Space Act (H.R. 1702) which *inter alia* provides the FAA with licensing authority (which it lacked so far) over the next generation private reusable launch vehicles (RLV's), including in particular their *reentry* into the earth's atmosphere. The bill was introduced in the House by the Chairman of the House Science Committee with the following remark:

"... this legislation, if enacted, will create a stable business environment in which the commercial sector can raise capital, develop a business plan, hire employees, and offer a space good or service *with the expectation that the government bureaucracy won't keep changing the rules.*" (emph. add.).[27]

Similarly, the Senate Report on the same bill, endorsing the President's National Space Policy of 1996 particularly where it referred to the government's role to create a stable and predictable environment for the U.S.

be expected.

27. See The Insider news, AIAA (Jun 1998) ("Space commercialization: pushing ahead in Congress") <http://www.aiaa.org/bulletin/june98-space-comm.html>.

commercial space industry, justified the enactment of the legislation *inter alia* as follows:

"Like any young industry, the commercial space industry is vulnerable to the sudden changes of government policy. H.R. 1702 is necessary to ensure consistency in government policy so that commercial space business can grow with the relatively reliable assurance that government policy will not change".[28]

But the same Congress is also quick to impose or require the imposition of sanctions on countries which have violated standards of conduct which Congress considers appropriate or desirable.
Such sanctions may interfere with the business of both the satellite manufacturers and the U.S. launch providers; in the short term, because a specific contract may be affected by a specific sanction, and in the long run, because the U.S. companies' reliability as a contracting party may be undermined, resulting in their clients going elsewhere for the same product.
In a more general way these sanctions may also interfere with the Administration's foreign policy vis-à-vis a specific country or group of countries. In all these cases the imposition of a sanction or the threat to do so creates an element of unpredictability and uncertainty as to both commercial dealings and official policies.
Finally, these sanctions may share the fate of similar actions on the part of the Administration, *i.e.* that, because of their unilateral character they are not only ineffective, but also endanger the competitive position of U.S. industry and - depending on the cause and the target - risk alienating trade partners or allies asked to support a cause they don't believe in or join a sanction they consider inappropriate or uncalled for.

In Chapter 2.3.4 *supra* some attention was given to the detonation of nuclear devices by India and Pakistan in May 1998 and the sanctions the U.S. imposed in response thereto. These sanctions were mandated by Sec. 102 of the Arms Export Control Act, the so-called Glenn Amendment, which, upon determination by the President, as reported to Congress, that India and Pakistan violated the Act, *required* the President to implement seven specific sanctions:
- terminate bilateral assistance
- terminate all foreign military sales and financing
- terminate Munitions List licenses
- deny credit guarantees and financial assistance by inter alia Ex-Im Bank financing
- prohibit U.S. banks from making any loan or providing any credit to the government of India or Pakistan, and

28. See Commercial Space Act of 1997, Senate Report 105-198 105th Cong., 2nd Sess. (Jun 2, 1998).

- prohibit exports of specific goods and technology subject to export licensing.

As a result, both the State Department and Commerce implemented changes in U.S. export control policy for India and Pakistan. Thus, the State Department revoked all licenses and approvals for the export (and temporary import) of all defense articles and defense services on the USML to or from India and Pakistan, including licenses/authorizations for manufacturing, technical assistance and distribution agreements.[29] The Commerce Department's Bureau of Export Administration (BXA) for example, on June 22, 1998, published a list of sanctions which included the following restrictions on exports:

"For nuclear and missile-related items and entities of concern:
- BXA will deny all export and reexport applications for dual-use items controlled for nuclear or missile nonproliferation reasons under the Export Administration Regulations [(EAR)] to all end users in India and Pakistan.
- Under the Enhanced Proliferation Control Initiative (EPCI), BXA will publish a list of Indian and Pakistani government and private entities involved in nuclear and missile activities. All exports and reexports of all items subject to the EAR will be prohibited to these listed entities."[30]

The restrictions included a 'presumption of denial', because of their broad commercial and possible proliferation applications, of exports of computers exceeding a certain capacity to (non-)government entities involved in nuclear, missile or military programs and of all controlled U.S.-origin dual-use items to Indian and Pakistani government entities involved in military activities.

A BXA official, in a July 1998 speech, called the Glenn amendment

"a rather rigid, pre-determined legislative mandate ... [which] gave us very little flexibility to tailor these sanctions to the circumstances ... Although we did our best to both fulfil the legislative requirements and avoid making these sanctions counterproductive (only time will tell if we succeeded), the Glenn amendment is certainly an example of the faults of predetermined mandatory sanctions."[31]

29. Bureau of Political-Military Affairs, Public notice 2825, *Revocation of munitions exports licenses and other approvals for India*, eff. May 13, 1999, Fed. Reg. Vol 63, No 97 (May 20, 1998) at 27781; and Public Notice 2835, *Revocation of munitions exports licenses and other approvals for Pakistan*, eff. May 30, 1998, Fed. Reg. Vol 63, No 116 (Jun 17, 1998) at 33122.
30. See U.S. sanctions on the export of dual-use goods to India and Pakistan, U.S. [DOC, BXA] (Jun 22, 1998) <http://www.bxa.doc.gov/ind-pak.htm>.
31. See Update 98 remarks, Roger Majak, Ass. Secretary for Export Administration, DOC (Jul 7, 1998) hereinafter referred to as Majak Update 98 remarks<http://www.bxa.doc.gov/press/98/RogerUPDS.html>.

This remark reflected a sentiment also heard in other Commerce statements, some of which have been quoted already. From a speech held in the same period for the same industry audience, one could distil remarks such as:

"[We should focus controls on ... choke-point technologies [only] ... That is why Congressional action last year [in 1997] imposing new constraints on the export of high performance computers is so frustrating ... Congress is missing the point of export controls ...

Some of you may see the bill [*i.e.* the new Export Administration Act] as a cap on your ability to make further progress in a more hospitable Congress. I'd urge you to see it instead as a floor that will build in protection against a less friendly Administration and Congress. That such protection is needed is illustrated by the Congressional attack on our computer policy.

...

... other issues we continue to face [such as] ... the periodic surprises Congress puts on the table.

...

[we should] better coordinate our sanctions policy. We are driven to sanctions in cases like Cuba and Iran, often because of the Congress, but also by our determination to condemn and modify, if we can, behaviour we find unacceptable."[32]

Noting that there would undoubtedly be further efforts to impose sanctions, Commerce reported that several additional measures were currently pending in Congress, the most far-reaching of which, the so-called religious persecution legislation promoted by the Christian Coalition and primarily directed at China, would impose expanded export restrictions on governments declared to be engaged in such activities. In the meantime, a bill which would have imposed mandatory sanctions on Russia because of weapons-related sales to Iran was vetoed by the President. In a press briefing at the State Department, a spokesman harshly criticized the legislation:

"We think the bill's rigidity, inflexibility and lowering of the standard for what would require sanctioning ... would open the door to a whole series of sanctions at the very time that the Secretary and the President are trying to make clear and hope Congress understands that these series of sanctions proposals coming out of the Congress harm our ability to conduct foreign policy, tie the Secretary's and the President's hands behind their back and make it harder to achieve the objective."[33]

32. See Reinsch, Update West 98, *supra* Ch. 2 note 262.
33. See U.S. Department of State, daily press briefing, DPB#76 (Jun 24, 1998) <http://secretary.state.gov/www/briefings/9806/980624db.html>.

4.1.2.4 The 'China affair' and the Strom Thurmond Act on satellite export controls

The most recent Congressional actions in this connection concern (again) China. As briefly alluded to in Chapter 2.3.4, the Congressional storm involves a number of issues, some of which are interrelated:

1. In February 1996, the failure of a Long March launch resulted in the destruction of a Loral-built Intelsat 708 satellite; (a) one of the circuit boards containing encryption information, considered sensitive, was not recovered from the remains and may have ended up in Chinese hands; (b) (the conclusions of) the report of a committee of experts assisting the insurance company in determining the cause of the failure fell into Chinese hands through the Loral expert in that committee, which was cause for a criminal investigation against that company into possible violation of the Arms Export Control Act (for illegal transfer of sensitive technology; The New York Times (NYT), in April 1998, cited a classified Pentagon report that reportedly concluded in May 1997 that American expertise was transferred to China that significantly enhanced the reliability of its ballistic missiles and that U.S. national security was harmed.
   (In a similar case involving Hughes, the latter shared with the Chinese its analysis of a 1995 crash of a Long March carrying the Hughes-made Apstar 2 satellite. Hughes had cleared this assistance (amounting to a transfer of technology) with Commerce but not with State, which should have been the proper procedure);
2. In February 1998, with the criminal investigation still under way, Loral obtained again a license for the export to China (for Long March launch) of a Chinasat-8 satellite (through a Presidential waiver of the Tiananmen sanctions). Some Republicans questioned the appropriateness of granting the license at this stage and, following NYT suggestions to that effect, saw a link between this license and donations to the Democratic party on the part of Loral's Chairman;
3. In 1996, the Clinton Administration approved the sale of an advanced Hughes satellite system to Singapore-based but Chinese (co-)owned Asia Pacific Mobile Telecommunications (APMT), including an export license for the first two satellites. Given the characteristics of the satellites, (Chinese) military use of the satellites is possible raising the question whether that sale should have been approved at all. Should the license be renewed after the satellites, in the meantime, have been made more powerful/sophisticated through the addition of an improved antenna with special characteristics?
4. In November 1996, the Clinton Administration transferred the licensing of commercial communications satellites from State to Commerce. Has this change resulted in a degradation of the protection for U.S. national security, and was this transfer 'encouraged' by Chinese and U.S. satellite industry 'offers which the U.S. President could not refuse'?

5. Was the 1988 decision to grant export licenses for U.S. satellites to China for Long March launches, thus providing the Chinese access to the commercial launch market, a sensible decision, given (a) the loss of USD hundreds of millions, if not billions, in launch revenues for the U.S. launch companies as a result thereof, (b) the improvement of the Long March performance and reliability, and (c) the possible use of that know-how for the improvement of China's ballistic missiles.

Congressional hearings on the totality of these issues showed on the one hand the difficulty to reconcile proponents of the U.S. commercial interests and those giving priority to national security and non-proliferation, with very little real debate between the two sides. On the other hand, the various parochial and (more and more) partisan dividing lines made for heated and less than constructive debates, frustrating both to the Administration and the satellite manufacturing industry.
Two pieces of legislation were introduced in the House, both seen as a serious threat to the latter industry and as dangerous and counterproductive sanctions, interfering with foreign policy, by the Administration: one would impose an outright ban on the shipment of any U.S.-built satellite to China, the other would reverse Clinton's decision of 1996 and transfer the licensing of satellites back to the State Department.
In October 1998, Congress decided to indeed return, with effect from March 15, 1999, commercial communications satellites to the Munitions List for export licensing by the State Department,[34] with tightened national security controls and reporting requirements.

Section 1513 of this *Strom Thurmond Act* provides:

"(a) Control of satellites on the United States Munitions List -
Notwithstanding any other provision of law, all satellites and related items that are on the Commerce Control List of dual-use items in the Export Administration Regulations (15 CFR part 730 *et seq.*) on the date of enactment of this Act shall be transferred to the United States Munitions List and controlled under section 38 of the Arms Export Control Act (22 U.S.C.2778).

...

(c)Effective date-
(1) Subsection (a) shall take effect on March 15, 1999, and shall not apply to any export license issued before such effective date or to any export license application made under the Export Administration Regulations before such effective date."[35]

34. See Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (H.R. 3616), signed by Pres. Clinton on Oct 17, 1998, Pub. L. 105-261, hereinafter referred to as Strom Thurmond Act, Sec. 1513.
35. See Title XV - *Matters relating to arms control, export controls, and counterproliferation*, Subtitle B - *Satellite export controls*, Sec. 1513. *Satellite controls under the United States Munitions List.*

President Clinton, in a statement on the day of signature of the Act, expressed strong opposition to this provision, and argued:

"This change is not necessary to ensure effective control of U.S. export of satellites and could hamper the U.S. satellite industry. The Congress repeatedly supported the transfer of satellite licensing jurisdiction to the Department of Commerce long before I ordered the transfer in 1996. I strongly urge the Congress to demonstrate its support for a strong domestic satellite industry by passing remedial legislation to halt this transfer of jurisdiction prior to its effective date."[36]

The President, in fact, said two things:
first, that the national security and foreign policy focus of the State Department would *not* result in more effective satellite export controls, but *would* affect the competitive position of the U.S. satellite industry;
secondly, that this regulatory change came about because Congress, rather unexpectedly, changed its long-held views on the matter: a hardly veiled presidential accusation of unpredictability of Congress.

Comments on the part of the U.S. aerospace industry centred on the cost of red tape resulting from these and other possible tightened high-tech sales rules. For example, the American Electronics Association and the Satellite Industry Association (SIA) argued that "tougher rules, along with lengthy license-approval procedures, will cost U.S. companies huge amounts of business. And in the end ... sales will go to European companies over which the U.S. has no control."[37] The added time resulting from the State Department handling the licensing of satellite exports would come from the limited staff available for the new task, but could also be attributed to the much more active role of Congress in overseeing items on the Munitions List. This could add two to six months to the process and, according to SIA, could cost the operator of a USD 100 million satellite as much as USD 9 million a month in lost revenue.[38]

The American Aerospace Industries Association, in a statement on the transfer, expressed extreme disappointment, particularly since the Congressional reviews on the 'China question' had not yet been completed, and added the following comment on behalf of the U.S. companies concerned:

36. Statement by the President, The White House, Office of the Press Secretary (Oct 17, 1998) <http://www.pub.whitehouse.gov/uri-res/I2R?urn:pdi://oma.eop.gov.us/1998/10/19/10.text.1>.
37. See WSJ (Dec 18, 1998) at 1 ("House Panel may urge tighter rules for exports of high-technology gear").
38. *Ibid.* In a "white paper" sent to administration officials and lawmakers in the same period, ISA spelled out some of the other cost incurred in the new system, such as a less favourable tax treatment, *i.e.* a reduction of the tax break from 5.2% to 2.6%.

"Commercial satellites are not weapons systems and there are numerous safe guards in place to protect U.S. technology during the pre-launch and launch process. State, Defense and Commerce are all involved in any decisions under the current procedure, as they should be, and the new law will not change this. What it will do is preclude U.S. companies from selling communications satellites to any country to which the law prohibits the sale of weapons systems, even if a U.S. launcher is used. It will also delay the licensing process, as Congress will have to be notified of any foreign launch of a U.S. satellite, even by the Europeans, which have launched U.S. satellites for many years.

...

It is extremely poor policy to restrict the sale of commercial products by treating them as though they were banned weapon systems."[39]

A few months *after* the adoption of the above legislation, DOD submitted a report to the Senate on Hughes' technical exchanges with the Chinese. The December 7, 1998 document alleged that Hughes, in an effort to prove that not its satellite but the Long March launch vehicle had caused the 1995 launch failure, "with the blessing of the Commerce Dept., may have passed sensitive technical information or know-how to the Chinese during its investigation of the Apstar accident."[40] The investigation's conclusions were reported, *inter alia*, to have identified the need for modifications in the Chinese launch vehicle fairing design and launch operations, to have provided China with details about the satellite design and some manufacturing/inspection practices and with insight into U.S. diagnostic techniques for assessing defects and launch vehicle satellite design. The DOD report placed significant responsibility for any improper technology transfer on the Commerce Department which apparently had not imposed any limits on the Hughes/Chinese investigation and had failed to consult with DOD on whether the documents shared by Hughes with China contained information that should not be released to the Chinese.

39. Statement by John W. Douglas, AIA President, on the transfer of licensing authority of commercial communications satellites to the State Department's munitions list (Sep 18, 1998) <http://aia-aerospace.org/homepage/jwdstmt2.html> When Clinton, in 1996, transferred the export controls from State to Commerce, the AIA supported these changes for the following reasons: "First, the EAA does not require notifying Congress of specific major transactions, while the AECA does - a process that can involve considerable delays. Second, there are export control sanctions geared toward defense articles, which catch any dual-use items on the AECA list. Finally, under the old regulations - where some commercial [aircraft] engines and satellites were controlled by Commerce and others by State - companies that worked with the same countries and similar technologies found themselves controlled by two different bureaucracies and two sets of regulations. The new regulations should eliminate this problem.", see 1 (4) AIA Update (Oct 1996) ("President clarifies export control jurisdiction for aerospace products") <http://aia-aerospace.org/homepage/nu1_4.html>.

40. See AW/ST (Dec 14, 1998) at 38 ("Pentagon plans new look at China tech transfer").

The DOD report however concluded that the possible benefits to Chinese missile programs resulting from the above exchange of information "did not likely alter the strategic military balance between the U.S. and China."[41] At the same time, the Pentagon noted that the available documentation, on which it based its report, had not been complete, and that definitive judgement on the matter had to await a further thorough study conducted together with the State Department. The latter concluded in early February 1999 that "the 1995 'tutorial' by Hughes resulted in significant improvement to China's rocket program and that the lessons were inherently applicable to their missile programs as well."[42]

The above Administration action was overtaken by a report approved by a select House Committee (a bi-partisan committee of Representatives with - mostly - a national security background, which had been instituted in May 1998 after the above New York Times article had disclosed details on Hughes' and Loral's 'high tech' assistance to the Chinese). Although the classified contents of the January 1999 report, the 'Cox Report', were not released, it was confirmed by witnesses and intelligence officials who worked with the Committee that the report agreed with the above assessments by the Pentagon and the State Department that information shared with Chinese scientists by Hughes and Loral had improved Beijing's ability to launch satellites and ballistic missiles.[43]

41. *Ibid.* In fact, according to the Washington Post of Jun 7, 1998, already in March 1997 the USAF's National Air Intelligence Center (NAIC) concluded in a classified report that Loral and Hughes provided expertise that helped China to improve the guidance systems on its ballistic missiles and that U.S. national security was damaged. The NAIC report was supported by the State Department's Intelligence and Research Bureau (INR) and sent to DOD's Defense Technology Security Administration (DTSA), the State Department and the Justice Department. A classified DTSA report of May 1997 on the issue reportedly concluded that Loral and Hughes had illegally transferred expertise to China that significantly enhanced the reliability of its nuclear ballistic missiles and "United States national security had been harmed". In September 1997 the Department of Justice began an investigation into these allegations; in 1998, the Department also started a preliminary inquiry into whether political donations influenced Pres. Clinton's approval of the export of (Loral) satellites to China, see *China: possible missile technology transfers from U.S. satellite export policy - background and chronology*, CRS Report for Congress, 98-485 F (Aug 13, 1998) at 6, 23 and 27 resp.
42. See WSJ (Feb 23, 1999) ("Bipartisan rocket security report").
43. *Ibid.* In May 1999, an unclassified, redacted version of the Cox Report was released: *U.S. national security and military/commercial concerns with the People's Republic of China* <http://www.house.gov/coxreport/>. The text of the relevant 'Overview' part of the Report (sub D) reads as follows: "In the aftermath of the three failed satellite launches since 1992, U.S. satellite manufacturers transferred missile design information and know-how to the PRC without obtaining the legally required licenses. This information has improved the reliability of PRC rockets useful for civilian and military purposes. The illegally transmitted information is useful for the design and improved reliability of future PRC ballistic missiles as well". The Committee, whose full name is the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China, chaired by

In this atmosphere, it is not surprising that the Administration decided, on February 22, 1999, to disapprove the sale of the Hughes commercial communications satellite to the APMT consortium. This took the form of a notice of intent on the part of Commerce dated February 24, to deny the export licenses necessary for the deal to go through. Though the Commerce Department was still in charge of licensing the export of these satellites, and favored the sale, both Defense and State, and other (intelligence) agencies concerned, objected both to the *launch* by the Chinese and to the *control* of the satellite in orbit by the Chinese, the latter because of the commercial and technological benefits that would alledgedly accrue to the Chinese military, through its use of the satellite.
As a result, APMT, in April 1999, cancelled its contract with Hughes.[44]

Rep. (R) Cox, in its 700-page report, also came with other, far more explosive revelations on Chinese military and economic espionnage, and the theft of military technology, including nuclear weapons design. The Committee held 33 closed hearings, taking testimony from intelligence officials, industry executives and nuclear-weapons experts. The Committee made 38 recommendations for legislation or executive orders to address the 'policy failures' of the Reagan, Bush and Clinton Administrations in this field, covering such policy categories as security at weapons laboratories, the handling of sensitive intelligence data and export controls. A February 1999 White House response to the Cox recommendations announced *inter alia* the establishment of end-to-end monitoring of launch campaigns (and failure investigations) and the collection, and distribution to State, DOD, Commerce and CIA, of all documents authorized for release to China. In addition, DOD will form a Space Launch Monitoring Division "with a cadre dedicated to make sure sensitive technology doesn't leak when U.S.-built satellites are launched from China", see AW/ST (Feb 15, 1999) at 21. In the meantime, the Senate Intelligence Committee is engaged in a similar investigation, and is already reported to also criticize Hughes for its dealings with China; this may lead to further Congressional suggestions to tighten export controls.

44. See Space News (Apr 26, 1999) at 26 ("Hughes struggles to avoid lay offs/tries to minimize effects of APMT satellite contract cancellation"); see also AW/ST (Mar 29, 1999) at 3, 27 ("Hughes races to save APMT deal"); the article quotes Majak, the assistant secretary of Commerce for export administration as saying that a change of launchers for the APMT satellite "might be a basis for revisiting the government decision." If correct, this would suggest that the government agencies concerned attach more importance to preventing a repetition of the original Hughes 'crime', *i.e.* the transfer of launcher-technology relevant know-how through the satellite-launcher interface, than to denying the Chinese military the benefits of sophisticated satellite communications through the use of the Hughes satellite. According to the same article, however, another government official had emphasized that the Chinese *launch* was just one of many factors in the decision not to approve the export license. A Hughes spokesman said in this connection that the choice of launchers remained up to the customer, *i.e.* APMT. Finally, a Congressional source was reported to have called a reversal of the denial "about as popular with Congress as the idea of inviting the president to be the keynote speaker at the Republican convention in 2000", see *ibid.* A related case is that of the Loral-built Chinasat-8 bought by China. The export of the satellite was approved on February 18, 1998 after President Clinton had waived the Tiananmen sanctions under P.L. 101-246 for this satellite. The delivery of the satellite in April 1999, as contractually agreed, is, notwithstanding that approval, being delayed because of new federal reviews based on the tightened 'high tech' export controls, see WSJ (Apr 2, 1999) ("Loral says reviews of sales to China delay new satellite").

On March 15 the State Department's amendments to the ITAR went into effect. These amendments, made necessary by the Strom Thurmond Act, re-designated commercial communications satellites and related items on the U.S. Munitions List (USML).
Briefly, the rule change provides for USML coverage of all spacecraft, except NASA's International Space Station, including

"... all satellites, and all spacecraft technical data, as well as all components, accessories, attachments, and related technical assistance, including without exception, all launch support activities (e.g. technical data provided to the launch provider on form, fit, function, mass, electrical, mechanical, dynamic, environmental, telemetry, safety, launch pad access, and launch parameters, as well as interfaces for mating and parameters for launch)."[45]

The amendment requires special additional export controls in the case of the export of any U.S.-origin satellite or related item or any controlled defence service "associated with the launch in, or by nationals of, a country that is *not* a member of [NATO] or a major non-NATO ally of the United States ..."[46]
These special controls are two-fold, *i.e.*
(1) all licenses and other requests for approval require a technology transfer control plan (TTCP) approved by DOD and an encryption control plan approved by the NSA. The TTCP must require any U.S. person or entity involved in the export to notify DOD in advance of all meetings and interactions with any foreign person or entity that is a party to the export;
(2) the U.S. person concerned must make arrangements with DOD for monitoring services (paid by the former and to be performed by the latter), which will cover all discussions on, and activities with respect to, the satellite 'from the cradle to the grave', in fact from the design phase up to and including the launch of the satellite and the possible launch failure.

As for the latter, for an investigation into, or an analysis of, a failure of a launch in a foreign country (including a post liftoff failure to reach proper orbit), a separate license is required and all special controls enumerated above apply.

45. See 22 CFR Parts 121 and 124 (Public Notice 3011), *Amendment to the International Traffic in Arms Regulations (ITAR): Control of commercial communications satellites on the United States Munitions List*, eff. Mar 15, 1999, Fed. Reg. Vol 64 No 54 (Mar 22, 1999) at 13679-13681, supplementary information.
46. The Public Notice mentions the 'established' NATO partners, (accidentally?) leaving out Poland, Hungary and the Czech Republic, which officially joined NATO on March 12, 1999. Under the heading "major non-NATO allies" the following countries are mentioned: Australia, Egypt, Israel, Japan, Republic of Korea, New Zealand, Jordan, and Argentina, see *ibid.*

Although the above special export controls do not apply when (nationals of) NATO members and major non-NATO allies launch U.S.-origin satellites and components (as the Act does not contain such a requirement),

"*such export controls may nonetheless be applied*, in addition to any other export controls required under this subschapter, *as appropriate in furtherance of the security and foreign policy of the United States.*"[47] (emph. add.)

Finally, the amended ITAR require a license for the export of technical data to insurance providers and underwriters in order to obtain or satisfy insurance requirements.

Both before and after the entry into force of the above amendments to ITAR, U.S. satellite (component) manufacturers and foreign companies alike expressed serious concerns about the effects of this legislation.
The U.S. companies predictably emphasized their worries about the absence of binding deadlines for the processing of the license applications combined with the significantly increased size of the commercial satellite market and a shortage of trained staff at the State Department to deal with all resulting applications; that and the requirement of Congressional notification for certain defence articles could significantly lengthen the licensing process and thus further hurt their competitive position vis-à-vis their foreign competitors.[48]
PanAmSat, a satellite service provider, complained that the increased export requirements were making it more difficult for the company to exchange technical data with its launch providers, provide satellite information to customers so they can make business decisions and work with international insurance underwriters.[49]
The latter aspect needs special attention as it will be difficult to obtain insurance coverage for satellites from insurers if the latter do not get a complete and timely insight into the technologies used. And the same applies to the post-accident investigations by or on behalf of the insurers for the settlement of claims. ITAR's requirement for a license for the export of technical data pertaining to the satellite to non-U.S. insurance underwriters complicates doing business with foreign - in practice mostly European - underwriters.[50]

47. See Sec 124.15 ("Special export controls for defense articles and services controlled under category XV: space systems and space launches"), at (a), (b), and (c).
48. See AW/ST (Feb 22, 1999) at 24-25 ("Satellite builders fear export nightmare"): "The timeliness of export license reviews could be the deciding factor in a non-U.S. customer's decision whether to purchase a satellite from an American or European supplier." (A chart, accompanying the article, showed that almost half of the commercial GEO satellites on order at Hughes, Lockheed Martin and Loral, 28 on a total of 60, were from non-U.S. customers).
49. *Ibid.*
50. See Space News (Apr 5, 1999) 1, 20 at 20 ("Satellite buyers blast U.S. rules - American firms face irate customers").

A point of major and obvious concern to the U.S industry is the exclusive 'national security and foreign policy' basis for the licensing decisions of the State Department, which, in the plans of that Department as submitted to Congress, would not be subject to review by Commerce.
And, of course, as a result of these tightened controls, the non-U.S. satellite builders, in particular the Europeans, would surely be the beneficiary, according to the U.S. companies concerned.[51] (That conclusion is being disputed as too simple by the European industry, in view of the fact that it is hard to find European satellites that do not have U.S. components in them, and these components are also subject to the stricter controls.[52])

But the most threatening aspect for the industry is not so much the legislation in itself, ill-advised and damaging as it may be, but the climate of uncertainty if not fear that has been created by the (handling of) the affair. Thus, in the Summer of 1998, the Administration was clearly intimidated by the above Congressional criticism and intent on refusing to give Congress further food for national security concerns, whether real or imagined. This resulted in embarrassing State Department actions preventing the Russian and Ukrainian Sea Launch partners from continuing technical talks with Boeing on the project and, as previously referred to, holding up Hughes Space and Communications' technical discussions with its customer APMT, and delaying approval of the sale.[53]

In a critical commentary, the trade press spoke of "the Clinton administration's overreaction to complaints from highranking members of Congress ...", and observed:

"The criticism has created a climate of fear so intense that officials at State, Defense and Commerce are scrutinizing even routine communication between U.S. companies and their customers in countries that are close U.S. allies, such as Canada and France."[54]

The result of this scrutiny, combined with a dispute between State and Congress about (lack of) funding for the Department's additional licensing staff, has been "an enormous backlog of applications that grows with each

51. See AW/ST (Feb 22, 1999) at 24-25.
52. See Space News (Mar 15, 1999) 4, 20, at 20 ("U.S. export rules draw fire - European Commission seeks evidence to lodge protest"), hereinafter referred to as European Commission protest.
53. See Space News Online (Jul 20, 1998) at 2 ("Russians, Ukrainians barred from Sea Launch") <http://www.spacenews..members/sarch/sarch98/sn0720r.htm>; also Space News Online (Aug 17, 1998) at 14 ("Sea Launch Snafu") <http://www.spacenews..members/sarch/sarch98/sn0817p.htm> and *id.* (Aug 24-30, 1998) ("Ouster of Hughes is painful APMT option") <http://www.spacenews.com/smembers/sweek/index.html>. And, in Winter 1998/1999, as a result of the above, even the - normally smooth - launch contacts between Hughes and Arianespace became more complicated.
54. See Space News (Apr 5, 1999) at 14 ("A bungled transition").

passing day." The whole situation, according to the same commentary, "paralyzes the U.S. satellite industry and makes it difficult for manufacturers to engage in any business activity that involves clients outside the United States." In fact, the industry sees the government measures and control practices as a general crackdown on space related exports. As a result, during April 1999 an increasing number of U.S. companies reportedly felt obliged to seek alternatives in the U.S. for their - originally - foreign launch plans and U.S. satellite (component) manufacturers refrained from bidding for contracts offered by foreign clients.[55]

Both Canada and Europe in the meantime voiced their concern about the effect of the ITAR changes and the accompanying tightening of controls and enforcement which were already noticable before the amendments entered into force.
Canada, thanks to its special defence economic relationship with the U.S., had been exempt from many of the provisions of the ITAR. Thus, for most defence articles and services no U.S. permits for export to Canada were required.
To the dismay of the Canadian Defence Industries Association (CDIA), which published an assessment of the proposed ITAR amendments, the new ITAR reflects an abrupt departure from that special relationship. According to that report,

"[t]he proposed changes to the ITAR will significantly increase the requirement for export licensing to Canada, negatively impact both US and Canadian defence firms, and present challenges to Canada-US relations on the national security, diplomatic, and international trade levels."[56]

More in particular, because of the inclusion of all spacecraft and commercial satellites, remote sensing satellites, Canada's speciality, will also be covered. As the report noted,

"Canada has developed a global expertise in the design, development, and operation of remote sensing satellites, but since there is a degree of US technology in the Canadian product, then that technology and everything related to it comes under the ITAR. Moreover,

55. See Space News Online (Apr 13, 1999): "Final Analysis Inc. is taking extra precautions [by checking into alternative launch plans using U.S. rockets] as it seeks a U.S. government license to export [LEO] communications satellites for launch on Russian Cosmos rockets."; "Ball Aerospace & Technologies Corp ... declined to bid on two recent opportunities to sell advanced satellite imaging systems [to South Korea] ... because of the ongoing government crackdown on space-related exports." And, as the same issue reported, U.S. RLV firms see benefits from the export clampdown: "As long as there is a perception of difficulty in getting export licenses to launch satellites outside the [U.S.], U.S. reusable launch vehicle (RLV) builders [such as Kelly Space and Technology] see a heightened opportunity to book launch orders."
56. *An assessment of the proposed changes to the International Traffic in Arms Regulations (ITAR)* (Feb 26, 1999), CDIA <http://www.cdia.can/assessment.htm>, at 1.

since the major shareholder of Canada's leading firm in this technology area is a US firm, then DOS could undertake to control the marketing of Canada's remote sensing technology and related products. The bottom line is that virtually all of Canada's space industry will be redefined as "military products and technology" and the control of a significant part of that industry assumed by the Department of State."[57]

The report makes a number of other observations worth mentioning in the framework of an evaluation of the effects of U.S. laws, policies and practices on the (free) trade in launch services:
(1) it sees "a growing protectionist sentiment in the US" as a background contributing factor to the ITAR update;
(2) with its unilateral change of the rules of the export control game, the U.S. government introduces a risk factor in that Department of State approval for export permits for Canada cannot be accepted as a given. In fact, the resulting increased cost and delays may be so much of a hassle "that it will not be in the interest of the US firms to engage Canadian suppliers";
(3) finally, and maybe most importantly, an observation shared by other U.S. allies affected by the measures:

"... DOS action implies a determination that Canada cannot be trusted."[58]

Other companies outside the U.S., regular customers of the U.S. satellite manufacturers, voiced similar complaints. One European company, Société Européenne de Satellites (SES), the Luxembourg-based operator of the Astra direct-broadcasting satellite system, addressing a space insurance conference, said that he could not understand why the new U.S. procedures apply to NATO members and other U.S. allies in the same way as they apply to China:

"[t]he policy should not affect U.S. allies. There should be some differentation introduced into the way the law is enforced."[59]

The European Commission, raising the issue with the U.S. administration on behalf of the European satellite manufacturing industry, shared that view, but added a more thorny dimension, namely that of trade and protectionism. According to a Commission official,

57. *Id.*, at 2.
58. *Id.*, at 3. An article in Space News on the Canadian report explains that "State proposed stiff revisions to ITAR [affecting Canada] in response to growing concerns that Canadian policies governing the export of U.S. made equipmentand technology are lax. U.S. officials are particularly worried about exports of restricted American-made military products that end up in countries such as China, Iraq and Iran", and mentions two (foiled) attempts, see Space News (Mar 22, 1999) 1, 19, at 19 ("Export rules worry Canada") .
59. See Space News (Apr 5, 1999), at 20.

"*[i]f* it is strictly a national security issue in Washington, then *of course* European companies should not have to run a gantlet of restrictions."(emph. add.)[60]

Europe's suspicion that the rationale for this Congressional legislation is at least partially trade-related was fuelled by language of the Strom Thurmond Act, such as:

"It is the sense of Congress that--
... (7) the United States should pursue policies that protect and enhance the United States space launch industry ..."[61]

That trade-aspect is even more prevalent in the sections dealing with controls specifically directed at China.
For example, Sec. 1512 of the Act requires the President to certify to the Congress at least 15 days in advance of any export to China of U.S. *missile* equipment or technology that

"(1) such export is not detrimental to the United States space launch industry; and
(2) the missile equipment or technology, including any indirect technical benefit that could be derived from such export, will not measurably improve the missile or space launch capabilities of the People's Republic of China."

The interesting conclusion one can draw from this provision is that, not only is there a strong bias against China's GWIC becoming a safer, more efficient, and thus more competitive, launch provider (regardless of whether it has U.S. clients or not!), but also that the notion of (export of) *civil* launch equipment or technology is totally absent, which implies that, in the view of Congress, the latter simply does not exist as a good or service distinct from the military version. (The alternative interpretation, that the export of U.S.-made *civil* launch goods and services to China is not mentioned and is therefore possible without having to meet the above criteria, is less likely because of the above-noted bias against China becoming a better launch provider.)

Sec. 1515, entitled *Report on export of satellites for launch by People's Republic of China*, requires that any Presidential waiver of the Tiananmen satellite export restrictions to enable China to launch a satellite of U.S. origin or related items should be accompanied by a detailed justification setting forth, apart from a limited number of security-related items (such as "the reasons why the proposed satellite launch is in the national security interest of the

60. See European Commission protest, supra note 52, at 4.
61. Sec.1511. Sense of Congress, Strom Thurmond Act, *supra* note 34. Adding to their concern was the news that preparations for an Ariane launch of six Loral-made Globalstar satellites had to be halted because the required Technical Assistance Agreements, traditionally a rather routine matter for the European and American companies concerned, had not (yet) been approved by the State Dept., see Space News (Mar 1, 1999).

United States"(!)), the following, impressively exhaustive, amount of economy - and trade - related information:

"(5) The impact of the proposed export on employment in the United States, including the number of new jobs created in the United State, on a State-by-State basis, as a direct result of the proposed export.

(6) The number of existing jobs in the United States that would be lost, on a State-by-State basis, as adirect result of the proposed export not being licensed.

(7) The impact of the proposed export on the balance of trade between the United States and the People's Republic of China and on reducing the current United States trade deficit with the People's Republic of China.

(8) The impact of the proposed export on the transition of the People's Republic of China from a non-market economy to a market economy and the long-term economic benefit to the United States.

(9) The impact of the proposed export on opening new markets to United States-made products through the purchase by the People's Republic of China of United States-made goods and services not directly related to the proposed export.

(10) The impact of the proposed export on reducing acts, policies, and practices that constitute significant trade barriers to United States exports or foreign direct investment in the People's Republic of China by United States nationals.

(11) The increase that will result from the proposed export in the overall market share of the United States for goods and services in comparison to Japan, France, Germany, the United Kingdom, and Russia.

(12) The impact of the proposed export on the willingness of the People's Republic of China to modify its commercial and trade laws, practices, and regulations to make United States-made goods and services more accessible to that market.

(13) The impact of the proposed export on the willingness of the People's Republic of China to reduce formal and informal trade barriers and tariffs, duties, and other fees on United States-made goods and services entering that country."

It would be tempting to predict whether the President's report will succeed in providing a sufficiently satisfactory justification to prevent a Congressional rejection of a specific future U.S. satellite export to China. However, a detailed analysis per sub-heading clearly would fall outside the scope of this study. In any case, it would not change the overall conclusion the above provisions unavoidably lead to, namely that Congress, through the use of a veritable plethora of economic and trade-related criteria (in addition to national

security-based conditions) strongly discourages - and *wants* to discourage - the use of Chinese launch services for orbiting U.S.-made satellites.[62]
In fact, the Strom Thurmond Act has all the characteristics of a Congressional sanction imposed on the U.S. satellite manufacturers, the U.S. administration and the People's Republic of China.

An interesting question in this connection is whether the Act, whether seen as a sanction or not, will be effective. In other words, will it serve *e.g.* its national security-related purposes.
Part of the answer lies in the extent of *foreign availability* of the goods and technologies controlled by the Act. Another part lies in the export control behavior of the respective foreign authorities. For, as has been observed before, national controls of one country are basically only effective in two cases:
a) when other countries' companies can not deliver comparable goods and/or services,[63] or
b) when comparable goods are available in other countries, but the authorities concerned apply the same/comparable export controls as the first controlling country.

The first question is therefore whether China will be able to buy commercial communications satellites from other countries.
The answer is, in principle, yes: both European (*e.g.* DASA, Alenia and Aerospatiale) and Japanese companies (*e.g.* Mitsubishi, Toshiba, NEC) have the ability to manufacture these satellites. In fact, the U.S. commercial satellite industry now controls about 75% of the world market, and Europe (with between 20% and 25%)[64] and Japan share the remainder. As for sales to

62. The result of this Act may thus approach the purpose of a related bill which was (re-) introduced in the 106th Congress as H.R. 281 "[t]o prohibit the export to the [PRC] of satellites and related items" (Jan 6, 1999), Sec.1 of which read: "Notwithstanding any provision of subtitle B of title XV of the [Strom Thurmond Act], or section 902 of the Foreign Relations Authorizations Act, Fiscal Years 1990 and 1991 (22 U.S.C. 2151 note), *no satellite of United States origin or related items may be exported to the [PRC]."* (emph. add.) On the above date the bill was referred to the House Committee on international relations; until April 1999 no action had been taken. <http://thomas.loc.gov/cgi-bin/query etc.>.

63. A Commerce report mentions some measures which are not subject to foreign substitution such as denial of a U.S. quota, withdrawal of port privileges or landing rights, and actions in international financial institutions to withhold loans and assistance, which cannot be undone or overcome by the target country, see *1999 Report on foreign policy export controls, U.S. Dept of Commerce, Bureau of Export Administration* <http://www.bxa.doc.gov/PRESS/99/Repts/ForeignPolicyTOC.html> hereinafter referred to as BXA 1999 report, at 2.

64. The U.S. percentage comes from the US Satellite Industry Association, see Clayton Mowrey, USA Today Search (Feb 23, 1999) ("U.S. denies satellite sale to China") <http://www.usatoday.com/>; it tallies roughly with an - older - EC estimate which gave the European industry a 20-25% market share in the satellite manufacturing sector, see *The*

China, up to mid-1997, the U.S. accounted for 50% of all communications satellite and related equipment sales (with an estimated potential purchase by the Chinese of USD 3 billion over the next 10 years).[65]

The same affirmative answer should be given to the related question, namely whether other foreign buyers which choose an - uncertain - Chinese launch of their U.S. satellite will be able to, henceforce, buy non-U.S. satellites to avoid those launch uncertainties.
As a senior Commerce official said after the denial of the Hughes satellite sale to China,

"U.S. manufacturers could face difficulties in the worldwide market for commercial communications satellites if they cannot get licenses or if other countries perceive the [U.S.] companies will face trouble getting licenses."[66]

The Satellite Industry Association, at the same occasion, put it more bluntly:

"You're going to kill the golden goose ... You're creating a situation where the perception is you can't get a license or it's difficult to get a license[67]
...
There is no doubt it will benefit the European satellite manufacturing industry, because it's going to be easier for customers to procure satellites from European suppliers."[68]

European Aerospace Industry - Meeting the global challenge, COM (97) 466 fin., European Commission, Brussels (Sep 24, 1997), at 1. The Japanese companies so far mainly produced for the Japanese market. That global competition, mainly between U.S. and American companies, is stiff can be also be deduced from the Canadian satellite manufacturer Spar Aerospace's decision to leave the satellite business: "... Spar was not willing to make the investments necessary to bring its satellite divisions to the competitive level of the large U.S. and European companies", see Space News (Feb 15, 1999) at 16 ("Without satellites Spar expects profit in '99").

65. Statement by AIA President Don Fuqua at the occasion of the House vote on the renewal of China's MFN status (Jun 24, 1997), AIAA Legislative Update, Vol 3, No 2 (Jul 1997) <http://www.aiaa.org/policy/legupdate-07977.html> Another figure in this connection: of the 20 'Tiananmen waivers' granted by Presidents Bush and Clinton up to and including the February 18, 1998 waiver for the ChinaSat 8 manufactured by Loral, 15 concerned U.S.-built satellites and 5 foreign-built satellites (with U.S. components), see *Presidential satellite waivers and other related launch information*, AIA (Jun 8, 1998) <http://aia-aerospace.org/homepage/china_table 1.html> the latter figures donot distinguish between satellites bought by China on the one hand and launched by China for a foreign buyer on the other hand.
66. USA Today Search (Feb 23, 1999) ("U.S. denies satellite sale to China") <http://www.usatoday.com/>.
67. *Ibid.*
68. Space News (Mar 15, 1999) at 8 ("Industry officials fear repercussions of license denial"). In the same article, AIA vice president international affairs Johnson is quoted as follows: "Furthermore ... European satellite builders could benefit from the perception among potential customers that U.S. satellite builders are less reliable because they cannot be sure launch plans will stay intact. Customers with many millions of dollars tied up in a single

And an editorial comment in the trade press of mid-1998 stated:

"What sanctions will do is diminish U.S. influence over Chinese policy and help manufacturers in Europe and Japan sell satellites to China. U.S. sanctions aginst China would also mean higher launch prices throughout the world. Sanctions could also bring an end to U.S. dominance in satellite manufacturing."[69]

But a comment made by a senior administration official at the occasion of the official rejection of the Hughes satellite sale to China put the *foreign availability* issue in perspective. He speculated that

"... the Chinese would likely move quickly to obtain a similar satellite from Europe, in part to drive home their ability to circumvent American restrictions and reward non-American competitors. *However it appears unlikely that China could acquire technology as sophisticated as that offered by Hughes.*"[70] (emph. add.)

The question indeed is whether the products which are available in other countries are comparable, in quality/sophistication, price and delivery times with the U.S.-manufactured ones.
Other views appear to echo the above opinion that the U.S. manufacturers, in particular undisputed market leader Hughes, make superior satellites:

The Department of Commerce, reporting on the effectiveness of export controls, observes:

"Although the United States is *the world's leader*, other countries produce commercial communications satellites ..."[71] (emph. add.)

And, similarly, in the trade press:

"*Though the U.S. still holds an enviable lead in satellite technology*, Europe is pushing to catch up"[72] (emph. add.)

spacecraft cannot afford the uncertainty of not knowing when, or even if, a launch will be permitted by U.S. regulators.." And an Australian spacebusiness expert said: "Anything that damages their [i.e. European and Asian satellite manufacturers'] competitors helps them ... The history of the U.S. space industry is dotted with government decisions which have advantaged the United States ' competitors, and this would appear to be another one." (Middleton, Asia Pacific Aerospace Consultants).

69. Space News Online (Jun 8, 1998) at 18 ("The illusion of sanctions") <http://www.spacenews...members/sarch/sarch98/sn0608i.htm>.
70. WSJ (Feb 23, 1999) ("Citing security, U.S. spurns China on satellite deal").
71. See BXA 1999 report, *supra* note 63, at 96.
72. AW/ST (Jan 25, 1999) at 57.

In fact, non-American satellite producers are seen as lagging behind in all of the above three aspects, quality, price and delivery times, as illustrated by the following approximate 'grading' figures (based on a 'best buy' grade of 100 for the satellites built by U.S. companies):[73]

	U.S.	*Europe*	*Japan*
-quality/sophistication	100	80	65
-price	100	65	50
-delivery time	100	70	65

Though these figures suggest a less than complete foreign availability, it should be realized first, that not all foreign customers necessarily require - or can afford - the most sophisticated satellites, and secondly that the fast delivery time and other advantages of a U.S. satellite may be offset by the uncertainty about the delivery actually taking place within the agreed timeframe. In that sense, the Strom Thurmond Act brings a competitive advantage to the non-U.S. manufacturers, the more so, since an increase in orders for the latter will undoubtedly have a positive influence on both quality, price and delivery times of the satellites they build (and thus further increase foreign availability!).

Will the European manufacturers thus simply replace their U.S. competitors, thereby rendering the Strom Thurmond controls practically ineffective? A mere affirmative answer would ignore the fact that the countries concerned are signatories to both the Wassenaar Arrangement and the Missile Technology Control Regime which provide guidelines for national export controls on satellites and missile/launcher technology.

The question then is whether, and if so to what extent these countries will support this tightening of U.S. controls, in particular in respect of exports to China.
There are many reasons why that scenario is unlikely.
First, one should remember that in both Wassenaar and MTCR the traditional partners of cold war times, forming the nucleus of both regimes, have been joined by other countries not sharing that same background and having their own alliances or relations with other countries outside the membership. This complicates the task of identifying - new - common threats and determining - new - common answers thereto.

73. To avoid any misunderstanding, a lower grade means, per resp. category, a lower quality, a higher price and a longer delivery time. According to a RAND expert who provided the above grading on a non-attribution basis, the disparity is such that, in practice, "if not for U.S. export control delays, there would likely not be much of a contest in many cases", (Mar 4, 1999) (e-mail to author). A European and a Japanese satellite expert interviewed by the author both gave substantially higher grades for quality/sophistication to their own satellites.

Secondly, Wassenaar, like its predecessor CoCom, has always treated commercial communications satellites as 'dual-use' goods and technologies, irrespective of - changes in - U.S. national categorization.
Further, Wassenaar does not see or treat China as a country of special concern, and it is unlikely that the Hughes case as such will change that status.
A unanimous Wassenaar decision to tighten controls on those satellites or to treat China as a higher security risk would then only be feasible if the confidential parts of the Cox Committee report, made available for that purpose to at least the other satellite-selling Wassenaar members, would reveal that the sale to and/or the launch by China of Western communications satellites brought dramatic consequences in the field of regional/global security and/or missile proliferation. There is, at this stage, no indication that such information is contained in the report.
Obviously, the export self-interest of the members concerned, coupled with doubts on their side about the 'purity' of the national security rationale behind the legislation and suspicions about partizan and sinophobe (and trade!) considerations influencing its adoption, would also tend to discourage any Wassenaar-wide tightening of satellite export controls vis-à-vis China.[74]
Finally, coming back to the self-interest of the satellite-manufacturing Wassenaar members, U.S. military/intelligence information on the adverse effects of satellite sales to China or launches by China would have to be very convincing indeed to neutralize two crucial arguments favoring the continued use of Chinese launch services and the continued sale of satellites to China, namely

a) the size and importance of the Chinese market for communications satellites, which cannot be ignored by any serious satellite manufacturer, and
b) the limited availability of alternative launch capacity which would result in the disruption of satellite launch plans and delays of satellite-based telecommunications projects of both U.S. and foreign system operators.[75]

74. The U.S. administration is quite aware of the fact that, regardless of the China affair, members of the Wassenaar Arrangement do not necessarily share the same views on and/or interpretations of the obligations the regime entails. As the BXA 1999 report, *supra* note 63, observed, "[m]ost producers of commercial communications satellites ... are members of the Wassenaar Arrangement and are controlling these items as dual-use items *(albeit with widely divergent licensing policies).*" (emph. add.)

75. The AIA, responding to the bill which would have prohibited U.S. satellite launches on Chinese rockets altogether, said: "[a]s alternatives to the Chinese Long March rocket are not available for two to three years, launch plans for U.S. telecommunications satellite consortiums will be disrupted giving foreign competitors an advantage in controlling the skies", *Commercial satellite exports to China*, AIA (Jun 4, 1998) <http://aia-aerospace.org/homepage/china_exports.html> Mid-1998 U.S. companies had booked options for 10 Long March launches in addition to 4 U.S. satellites on backlog, see *Satellite launch fact sheet*, AIA (Jun 3, 1998) <http://aia-aerospace.org/homepage/china_facts.html>. In an editorial, Space News warned that, in addition to increasing launch prices throughout the world, "sanctions limiting Russian and Chinese commercial launch activity would create such a scarcity of launchers that some projects would have to be delayed, probably for years

Where multilateral and bilateral efforts vis-à-vis European co-members to support stricter U.S. controls on satellite exports will therefore probably fail, the U.S. administration has one 'big stick' left, *i.e.* the strict enforcement of export controls on key U.S.-made satellite *components* used by non-U.S. satellite manufacturers.
Earlier, reference was made to the Canadian Defence Industries Association's concern about the fact that the U.S. technology used in Canadian remote sensing satellites would bring the sale of those satellites under the - new - ITAR export controls.
A similar observation was made by the European satellite industry in reaction to the entry into force of the ITAR amendments:

"It is hard to find European satellites that do not have U.S. components in them, and these components are also subject to the stricter controls ... In some cases there are only two manufacturers of a given component and we need the U.S. companies to assure our supply chain. I suppose in a few years we could replace U.S. suppliers, and in a few years we could see extra business if U.S. exports are shut down. For now, we have a problem."[76]

Obviously, the extent to which the U.S. will, ot threatens to, make use of its component export controls affects the freedom the countries concerned have or perceive having to make their complete satellites available to buyers or launch providers of which the U.S. disapproves.
On the other hand, while such a measure could, in the short term, in principle be effective in making non-U.S. satellite manufacturers follow the strict U.S. approach, its use risks creating a major trade conflict with important trade partners and (NATO) allies such as Europe and Japan.

Additionally, it will only further strengthen the resolve of the foreign governments concerned, already fuelled by the uncertainties and ambiguities inherent in the present system, to become totally self-sufficient in satellite components or, to use the expression commonly used in this connection, to "design out" U.S. parts or components, a possibility recognized by both the U.S. industry and the administration.[77]

... [And t]here are only a handful of launch pads around the world and many of them are operating near capacity", Space News Online (Jun 8, 1998) at 18 ("The illusion of sanctions") <http://www.spacenews...members/sarch/sarch98/sn0608i.htm>.

76. Space News (Mar 15, 1999) at 4, 20 ("U.S. export rules draw fire - European Commission seeks evidence to lodge protest"). And see note 65 *supra* (Tiananmen waivers for 5 foreign-built satellites with U.S. components: these include DASA and Aerospatiale products).

77. AIA's vice president for international affairs Johnson was reported to have said that "European executives had told him they plan to design U.S.-made components out of their satellites to avoid the hassle of new restrictions", AW/ST (Mar 29, 1999) at 37. The BXA 1999 report, *supra* note 63, apart from seeing "conflicts with key allies" as part of the costs that come with unilateral sanctions, also remarks with regard to the recently imposed unilateral trade sanctions on India and Pakistan, that exporters have provided examples of Indian companies who have announced they will no longer do business with U.S. companies

One could conclude that the stricter, the more poorly targeted, broader or indiscriminately used or more doubtfully justified the unilateral controls turn out to be, the sooner they are undermined by the countries and companies affected, through 'go-it-alone' and independence-driven initiatives and the ensuing self-reliance. Unilateral controls thus dig their own graves.

Although the other non-U.S. launch service providers do not face the same draconic restrictions as China, there is sufficient evidence in the letter and spirit of the above provisions to conclude that, notwithstanding the national security origin and purpose of this piece of Congressional legislation, it discourages, as an accepted by-product, the use of any foreign launch services.

Whether the administration will relax the new export restrictions and, if so, vis-à-vis which countries, depends to a large extent on the (lobbying) activities of the victimized American and foreign companies and the latter's governments. Furthermore, the threat of another trade war with the EU or problems with the countries concerned in their capacity of NATO partners could influence the administration's thinking on the matter.
But most of all it will depend on how Congress's views on the real or perceived national security and economic threats evolve - this includes the distinction between the two -, which emanate from doing (space) business with foreign countries.

The main lesson to be drawn from the Congressional treatment of this issue is that the parochial, partisan and sometimes downright xenophobic character thereof leaves little room for compromise and reinforces the unpredictability of the laws, policies and practices with which the U.S. aerospace companies, whether engaged in the sale of satellites or launch services or in the procurement of launch services, have to cope.

Though Congress is the place where the various views, interests and priorities of the American people, companies and other entities, should be heard (whether on human rights, religion, WMD proliferation, minorities or other matters), it is the use of sanction legislation which, apart from its testimonial character and (possible) interference with Administration policies and strategies, has a strong 'rogue of the month' character which increases the

and are designing out U.S. parts and components. "This "designing out" phenomenon, as has been frequently noted, can damage the position of U.S. exporters beyond the loss of markets in the sanctioned country itself." Similarly, Stuart Eizenstat, Under Secretary of State, in 1997 testimony before a House Committee, quoted from studies which not only pointed to cases of 'designing out', but also to reports "that foreign firms have intentionally switched R & D away from the U.S. to Europe because of a desire to avoid sanctions problems", see Remarks before the U.S. [H.R.] Ways and Means Trade Subcommittee (Oct 23, 1997) <http://www.state.gov/www/policy_remarks/971023_eizen_house.html>, hereinafter referred to as Eizenstat 1997.

uncertainties U.S. exporters in general and high tech aerospace companies in particular have to face.

Congress, on the one hand endorsing a "stable and predictable environment for the U.S. commercial space industry", in its actions appears to move into a direction opposite to liberalization and thus constitutes a barrier to increased 'free and fair trade' in international launch services as the concept is seen by the Administration and by the customers.

A few final words on the increasing use of the sanctions 'weapon' as such. According to the President's Export Council, sanctions have been imposed more than 60 times since 1993 alone, more than in the preceding 80 years since World War I. This does not include nearly 100 state and local sanctions measures that are pending or already in force, creating additional complexity and obstacles for exporters.[78]
In a recent article on sanctions, appropriately headed "Addicted to sanctions - At this rate, the whole world will face U.S. penalties", the author submits that "[n]o other country on Earth opts for sanctions as often as America ... [they] currently affect more than 70 countries, home to two thirds of humanity ..."[79] The author continues with the following observation:

"... in city councils as in Congress, it is often emotion and short-term political calculation that drive the action, rather than confidence in the long-term success of sanctions."

And he quotes a Representative trying to reform the sanctions process:

"A wave comes over this institution ... You get a kind of rage here that develops over some conduct, and economic sanctions are the result."[80]

As observed before, the danger lies in other countries refusing to join (because of 'sanctions fatigue'), resulting in only U.S. suppliers getting a reputation for unreliability and losing business to overseas competitors: "In 1995 alone, unilateral sanctions cost the U.S. economy an estimated $15 to $19 billion and up to 260.000 jobs", quotes the same author the Institute for International Economics, a non-profit Washington think tank.
But one of the most serious aspects in the framework of this study is not so much the ineffectiveness of unilateral sanctions (which have so far never been submitted to a cost-benefit analysis), but the way these are used by Congress

78. See Majak, Update 98 remarks, *supra* note 31. According to Smith, Hughes' CEO, probably using the same source, since WW II, Congress has passed more than 100 pieces of legislation that include economic sanctions, 61 of which have passed during President Clinton's administration. "And 26 more unilateral sanction bills are pending in this Congress.", see Smith Deregulation 1998, *supra* note 1.
79. See U.S. News & World Report 30-31 (Jun 15, 1998) at 30.
80. See *ibid.*

to make or influence *ad hoc* foreign policy. As a spokesman for Senate Foreign Relations Committee Chairman Jesse Helms is quoted:

"All of these sanctions are essentially a vote of no confidence in the administration to achieve these [foreign policy] goals by other means."[81]

If we look again at the discussions in Congress about the Chinese launch issues, at the ensuing legislation and at the consequences thereof for the space (launch) industry, the above quote reflects a tendency which does not create much confidence in a constructive, predictable and even-handed approach towards the U.S. launch and satellite manufacturing industries' concerns and expectations with respect to their trade with foreign countries. The results of these Congressional actions seriously reduced prospects for a free(er) trade in launch services.

4.2 The position of the main foreign 'market economy' launch providers

To what extent does the free and fair trade 'à l'Americaine' provide an acceptable and workable environment for the U.S. launch companies' main foreign competitor, Arianespace?

4.2.1 Arianespace

First, it should be recalled that it was primarily U.S. protectionism which led to the creation of Arianespace. If the U.S., in the early 1970's, had not attached restrictive conditions to the launch of European satellites, the incentive to 'go-it-alone' would have been much weaker, particularly as the European wish to have access to space was not so much based on overriding military or 'national' security considerations, but rather on the wish to be, also in the promising space (applications) field, economically and scientifically, and of course also politically, independent from other countries. A more forthcoming U.S. government attitude might have convinced Europe to stick to the - undoubtedly much cheaper - practice of buying launch services from the U.S.

Second, 'assured access to space' is now as much an article of faith in Europe as it is in the U.S. Whether based on a combination of the above considerations alone or also on 'national prestige' or perhaps even - originally - Americanophobic feelings, this principle will determine European policies and reactions to any threat to Arianespace's continued existence.

81. See *id.*, at 31.

Third, to the extent the U.S. laws, policies and practices have worked against the interests of *e.g.* the U.S. satellite manufacturers by limiting their choice of foreign - 'non-market economy' - launch companies and/or by imposing sanctions on (potential) foreign customers, they benefited Arianespace.
On the other hand, the controlled entry of the new launch providers from China, Russia and Ukraine, the increasing access of these companies to the international commercial launch market and the future termination by the U.S. of the capacity quota and price restrictions all mean extra competition for the U.S. launch companies, but much more so for Arianespace. This is partly because the U.S. companies have concluded alliances with Russian and Ukrainian counterparts which not only strengthen their competitive position in the commercial launch market but also return part of the liberalization benefits to the U.S. companies. And, where the U.S. companies have an assured 'captive' government market of substantial proportions, Arianespace operates and has to survive in the international commercial launch market, making that company more vulnerable to any new (U.S.-assisted) entrants.

Fourth, though the U.S. launch companies have the benefit of not only guaranteed government service contracts ('fly U.S.') but also government production contracts (EELV), this is not necessarily a permanent advantage. For one thing, to the extent the government has taken the initiative and pays a large part of the bills for EELV research and development it also 'calls the shots'. The launch companies rightly foresee important commercial benefits to be derived from the use of the EELV on the international market, but, both in the R&D stage and in the operational phase, they will have to please two masters, with priority understandably going to the Department of Defense. That in itself is not necessarily a major handicap, apart from the risk that either the Administration or Congress changes its priorities (with the yearly Authorization and Appropriation battles in the latter forum providing every opportunity for members of Congress to challenge or attach conditions to DOD's support for this program). And, conversely, where the market has been shifting more and more to the private commercial customers, meeting the demands of the latter with respect to the product becomes of crucial importance, and, consequently, possible adaptions to the design brought about by DOD demands will make the launch companies more vulnerable to (potential) consumer discontent and counter-demands.

The growing importance of the private commercial market, both for the GEO and MEO/LEO, has also the effect of diminishing the relative importance of the U.S. government market. This may not in the short term reduce European apprehension about a playing field which, because of the absence of a comparable military and civil government contract base, is far from level, but it does in the longer term tend to even out the differences, and, in so far as private customers are still more difficult to please, gives, in the meantime, Arianespace to some extent an advantage in the experience gained in that market.

Fifth, apart from having merged into aerospace conglomerates of considerable technological and financial strength, the U.S. companies have also broadened their product base and opened up additional markets through the alliances concluded with Russian and Ukrainian launch providers. Arianespace, by comparison, is a very small company, operating separately from - and without semi-automatic 'family support' of - the large European aerospace companies. The combination of its limited size and financial elbow-room on the one hand with the company's focus on the international commercial market on the other hand dictate that, in the short term, its product base can only be widened and its market access increased to any appreciable extent by the conclusion of alliances with foreign launch partners. Where Arianespace has so far concluded only arrangements of limited scope with Russian and Indian launch entities, the European company could consider concluding strategic cooperative agreements with another non-aligned launch provider, such as the China Great Wall Industry Corporation.
In the present China-related political environment in the U.S., a link-up of a U.S. launch company with CGWIC would be fraught with legal and political problems and uncertainties, affecting the U.S. company's continued freedom to do business with the government and with the U.S. satellite manufacturers and operators. And, with the major U.S. launch companies already engaged in joint ventures with Russian counterparts and thus possessing launch capabilities fit for all sectors of the market, there would be little inclination on the U.S. side to engage in this kind of politically sensitive partnership.

A company like Arianespace, owned by European interests and incorporated in France, is of course also subject to Wassenaar and MTCR-based controls. But, in practice, national security and foreign policy considerations will play a much less prominent role in the national interpretation and application of these controls than in the U.S. There is, consequently, - and apart from 'constitutional' differences - little chance that Europe will share the U.S. view based on these considerations that the launch of Western-made satellites by the Chinese should be discouraged to prevent the transfer of satellite and launcher know-how to the latter or that launcher cooperation with China is not an option because of its inherent relevance for missile development. Arianespace would therefore be in a much better position to establish an alliance with the Chinese launch company and to offer their combined respective products to the international market. And the Strom Thurmond Act surely provides some strong incentives to the Chinese to seriously consider this possibility.
It must be assumed, though, that the same Sinophobic attitude of Congress which presently affects both U.S. launch companies and the satellite manufacturers and operators, could also result in U.S. government challenges of Arianespace's position as a competitor in the U.S. market, at present still free to attract commercial (non-governmental) clients (though - at least temporarily - affected by the Strom Thurmond controls). The fact of a European-Chinese alliance as such would create misgivings on the part of the

U.S. government in view of the possibility of launch and/or satellite technology exchanges between the partners.
The joint *sale* of Long March vehicles along the lines of the U.S.-Russian joint ventures would, if involving U.S. satellites, of course face the full array of U.S. export control-related restrictions without the mitigating effect of U.S. company lobbying.
A possible way out of the latter problem, insofar as it is caused by launches taking place from Chinese territory, would be the Cape York inspired variant of having Long March launches performed from the Guyana space center, which, in the context of export controls, is more 'friendly' French territory. (One must assume that the absence of a direct U.S. company interest in such a set-up would reduce the U.S. government's interest in fostering the regulatory and practical viability of U.S. non-governmental payloads being launched through this arrangement. On the other hand, Arianespace could probably count on the support of the U.S. satellite manufacturing industry for an alliance which would introduce European quality control standards and sales (support) practices into the Chinese launch business, making the Long March a more feasible alternative to U.S. launches than it is at present.)

Is there a possibility for Arianespace to join forces with a U.S. launch company? Its most valuable asset (apart from the Ariane family of launchers and its international customer base) is the Kourou Equatorial launch base, which would be an attractive 'dowry' for any U.S. launch company engaging in, or aspiring to engage in, GEO launches. Given Boeing's equatorial launch opportunities through Sea Launch and Lockheed Martin's cooperation with the Russian Proton builders, this would appear to leave the various smaller (upcoming) launch companies as potential candidates for an alliance with Arianespace, possibly along the lines of the latter company's arrangements with ISRO/Antrix or with the Russian Soyuz manufacturers. One major aspect to be taken care of would be that a joint venture type of arrangement would have to provide for such ownership/control by the U.S. company concerned that the latter would not risk loosing its American 'nationality' which would have predictable consequences for its right to carry government payloads under the 'fly U.S.' policy and legislation.

Sixth, though at various occasions in the past, U.S. launch companies, with the support of members of Congress have made pleas for agreeing on rules of the road with Europe (read: curtailing Arianespace's successful competitive efforts), there is at present little inclination on the U.S. side to either start bilateral or multilateral talks to that end. Where subsidization would traditionally be one of the subjects brought on the table by the U.S. side, it would at this stage of the 'game' be rather counterproductive to initiate discussions on the issue, the more so as, in that context, the European side would undoubtedly raise not only the government subsidy aspects of the EELV program, but also, as it has done in the past, the issue of 'fly U.S.'.

Finally, the U.S. regulatory environment, though for the time being dominated by national security considerations which even affect European companies, will be more and more influenced by fast-growing, increasingly powerful, private satellite manufacturing and satellite system operators' and communications conglomerates, which, whether they are co-owner of U.S. launch companies or not, will have a higher priority than that of the protection of or restrictions on any specific 'national' or other launch company: the satellites have to get into orbit and start earning money, and timely and reliable transportation at a decent price therefore has to be assured. That, in the longer run, will determine, more than anything else, the U.S. government's regulatory approach towards 'free and fair trade in international launch services'.
Arianespace would appear to be well positioned to play a successful and profitable role in that environment.
The company's weakest point - apart from the lack of a large captive government market - is probably the fact that it does not (yet) form part of an aerospace conglomerate of a size, scope and financial clout comparable to Boeing and Lockheed Martin. It will undoubtedly require considerable time and (regulatory) effort for the European launch service provider to further level the playing field by allying with the European aerospace industry whose restructuring is *in statu nascendi* (and long overdue). That, and maintaining its commercial and operational flexibility during the process, will be its greatest challenge for the years to come. In the meantime, it will have to rely on the European Union's political clout and determination to fight those aspects and effects of U.S. export controls which are patently trade-related and/or competition distorting.

4.2.2 Japan

What is *Japan*'s position in this regulatory environment?
It has been noted before that, for many years, Japan's access to space was dependent on U.S. launch technology, with a corresponding U.S. say over its commercial use. The resulting limitations were sufficient reason for Japan to 'go-it-alone' and develop the H-2 launch vehicle, indigenously built, but very costly and therefore unfit for the commercial market. The urgently felt need for a stronger and cheaper version has led to the purchase of a U.S. engine to power the H-2A, resulting in a return to a measure of U.S. dependence in the form of - primarily non-proliferation related - export licence conditions. These conditions will not stand in the way of Japan's access to the international commercial launch market, but form nevertheless a possible means for the U.S. (Administration or Congress) to exert some influence on Japanese behaviour. With a 'national security-neutral' status comparable to Europe's, - with concomitant effects of Strom Thurmond type U.S. controls - Japan will probably only be faced with U.S. government measures if its competitive behaviour clashes with the U.S. concept of free and fair trade in launch services (which would imply a situation in which RSC consistently and

successfully underbids its U.S. competitors - both in the U.S., worldwide and in the Japanese market - and the U.S. satellite manufacturers and operators would have sufficient alternatives not to be unduly worried by trade sanctions involving restrictions of Japanese access to the U.S. launch market.)
Though there is a long history of U.S.-Japanese trade conflicts resulting from aggressive marketing of Japanese products, it falls outside the scope of this study to predict if and to what extent Japan's launch company, once the H-2A is fully operational, will show such sanction/retaliation-inviting behaviour *vis-à-vis* its U.S. competitors. Although in the mean time the Japanese have already concluded H-2A launch contracts with both Hughes and Loral, it still has to prove the operational and commercial viability of this launch vehicle, both domestically and abroad.
The delayed and limited availability of launchers and launch windows will, for some years to come, determine to a larger extent the level of impact of Japan on the international commercial launch market than the U.S. laws, policies and practices in this field.

4.2.3 India

There is also *India*, a prime example of a country whose launch industry has been curbed in its development by national security and foreign policy-inspired U.S. restrictions and sanctions.
One must assume that, even after the Glenn amendment sanctions have been withdrawn, the U.S will continue to treat India as a proliferation hazard because of its missile program and its strained relations with Pakistan. MTCR-related controls may be expected to remain in place, affecting the development of India's launch industry. But, as we saw before, India's long-standing determination to 'go-it-alone' (with, at least in the past, a little help from its friend Russia), was actually strengthened by the restrictions on the transfer of foreign launch technology. To become self-supporting in both LEO and - in the near future - GEO satellite launches, in these circumstances, is nevertheless a major accomplishment. However, the rationale for both the MTCR controls (*i.e.* to prevent missile programs from getting 'off the ground') and for the restrictions on the export of other high tech goods such as satellites (*i.e.* to prevent certain countries from becoming smarter and better (militarily) equipped than considerations of national/regional security and foreign policy would dictate) will continue to result in the Indian launch industry's development being hampered by the forced lack of cooperation with foreign launch (technology) providers and will prevent U.S. satellite manufacturers and operators from concluding launch contracts with India's Antrix Corporation or with Arianespace for the use of the Indian PSLV (or, in the future, its GSLV).
The recent Congressional concerns about the national security aspects of Chinese launches of U.S. satellites and the adoption of the Strom Thurmond Act have made that abundantly clear.

4.3 Legal remedies against (the effects of) U.S. controls?

An interesting question at this - late - stage is that of the possible remedies against (the effects of) the U.S. laws, policies and practices.
The answer to this question is of interest to at least two distinct groups, the U.S. companies on the one hand and the foreign companies and countries concerned on the other hand, in other words the *domestic* and the *foreign* parties.

4.3.1 U.S. law

As for the former, though it is both interesting and challenging to investigate the national remedies available to the satellite manufacturers and launch companies vis-à-vis the U.S. government in connection with its laws, policies and practices as reviewed in the preceding chapters, it falls largely outside the scope of the present study and will, therefore, be treated in a limited way only.
Chapter 2.3, which dealt with (U.S.) satellite and missile technology export controls, explained the regulatory framework within which U.S. companies, engaged in the manufacture and export of high tech aerospace products, have to function.
In fact, every U.S. citizen, whether a natural or juridical person, who concludes a contract which involves the export of 'arms', 'munitions', 'defense articles', dual use goods or technologies, knows - or is supposed to know - that the AECA and/or the EAA applies to his (intended) transactions. He also knows that those Acts give broad powers to the State Department and Commerce respectively to apply in full, or not to apply at all, *c.q.* to suspend or modify any or all of the export regulations concerned, on national security, foreign policy or other grounds. Moreover, certain categories of defense articles cannot be exported without prior notification to Congress, with the concomitant right of Congress to approve or disapprove the export, or approve subject to conditions. Additionally, the above Acts *require* the imposition of sanctions, *inter alia* in the field of high tech exports, on countries which have violated MTCR standards of behaviour.
That is why U.S. satellite manufacturers and U.S. launch service providers, whenever they conclude a contract which involves the export of their goods, technologies and services, will include a clause which emphasizes that the contract is subject to all U.S. laws and regulations relating to exports. Thus, for example, a Martin Marietta - Intelsat launch service contract of 1987 provided:

"This contract is subject to all United States laws and regulations relating to exports and to all administrative acts of the U.S. Government pursuant to such laws and regulations."[82]

82. See art. 22.1, *Contract for commercial launch services* of Aug 10, 1987 between Martin

Not only do the U.S. firms concerned know (and take into account) that these laws and regulations apply, they also have to accept the risk that the (application of the) regulations may be amended or suspended, either by Congressional intervention or by new Presidential policies. (Also in this regard the space business, because of its high political profile and its national security and foreign policy aspects, is a high risk activity, which U.S. companies nevertheless engage in because of the (potential for) high rewards). The above cited risk is usually handled, in more recent contracts, under an 'excusable delays' clause, which would exclude liability for delay in performance by either side arising from acts of any governmental authority (in its sovereign or contractual capacities), including inability to obtain any necessary export licenses, unavailability of launch ranges, requirements for clearance times between launches, inability to obtain necessary and appropriate third party liability insurance, etc.

In the above regulatory and political environment, there appears to be practically no room for challenging the legality of the U.S. government's regulatory measures, policies and practices in this field, or for demanding compensation for the adverse consequences thereof.
In fact, in the light of the above contractual provisions which discourage customers from suing their contractors, it is not surprising that it is difficult to find any suit in the U.S. arising from government action, such as the imposition of sanctions on foreign governments or companies, affecting the sale of satellites or other space hardware or the provision of launch services.[83]

Marietta Corp. and the International Telecommunications Satellite Organization Intelsat, text in Glenn H. Reynolds and Robert P. Merges, *Outer Space - Problems of law and policy* (2nd ed.) 310-319 (1997) at 319.

83. After the August 1994 expiration of the Export Administration Act (EAA), the administration proposed a revised EAA based on a number of principles which took account of the changes which had taken place in the world in the political, technological and security field since the adoption of the EAA of 1979. Particular emphasis was put on balancing the overall goal of the new act, namely the prevention of WMD proliferation, with "the growing dependence of our own military on strong high technology companies here at home developing state of the art products and, in turn, those companies' need to export to maintain their cutting edge." This, in the view of Commerce, required - apart from *inter alia* the establishment of a clear preference for export controls exercised in conjunction with the multilateral nonproliferation regimes - increased focus "on our own economic security by greater discipline on unilateral controls" and "*expanded rights [for exporters] to petition for relief from ineffective controls* ...", (emph. add.) a so-called "unfair impact provision". A Congressional bill of 1996, the Omnibus Export Administration Act of 1996, H.R. 361, was largely similar to the administration's proposal, and also contained an "unfair impact provision" which clarified exporters'rights to petition for relief from burdensome and ineffective export control requirements; however, unlike the administration's proposal, it failed to include ineffective controls and competitive disadvantage as grounds for such petitions, see *On reauthorization of the Export Administration Act*, William Reinsch, testimony before the House international relations committee, Subcommittee on international economic policy and trade (Mar 3, 1999) < http://www.bxa.doc.gov/PRESS/99/EAAReauth.

4.3.2 Space law

As for the *foreign* parties, we will look beyond the U.S. -China, Russia and Ukraine launch trade agreements which all explicitly subject the rights and obligations contained therein to the U.S. export laws and regulations. The parties concerned know and have accepted that each individual case of a U.S. satellite export (for launch by any of the three countries concerned) will be dealt with in conformity with these laws and regulations and will only be licensed if the U.S. interpretation/application of these laws and regulations so allow.

To determine what remedies, in the non-contractual sphere, affected countries may have in the face of the above U.S. laws, policies and practices, one may consider first the relevant *lex specialis* of international law, *i.e.* the 1967 Outer Space Treaty.
The main provisions a 'victimized' country would find on the subject are the preamble and articles 1, 3 and 9. These provisions and some additional ones in the Treaty all emphasize two important guiding principles of space law as formalized by the Treaty, *i.e.* that of the the "common interest of all mankind" in the exploration and use of outer space, the equal right of all states to engage in such exploration and use and the requirement that such exploration and use should be carried out "for the benefit and in the interests of all countries", and, additionally, the principle of (international) cooperation. The 'core' provision is Article 1, which reads as follows:

"*The exploration and use of outer space*, including the moon and other celestial bodies, *shall be carried out for the benefit and in the interests of all countries*, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and *States shall facilitate and encourage international cooperation in such investigation*".[84] (emph. add.)

html>. Neither of the two regulatory measures have become law so far, and the present Congress clearly does not give a high priority to the expansion of U.S. exporters' rights in the field of export controls.

84. The preamble of the Space Treaty reads, in part: ... "recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development, desiring to contribute to broad international cooperation both in the scientific as well as the legal aspects

The general question, which has been debated ever since the Space Treaty entered into force, revolves around the extent to which this provision *obliges* states with space capabilities and space programs to share the benefits derived there from with non-'space-faring' nations (in practice in particular the developing countries). The latter always maintained that the above provision was intended to go further than allowing every country and its citizens to buy space-derived products and services in the market place at a price determined freely by the space-power(s)' companies concerned. And that, being able to become a member of Intelsat, install satellite communications groundstations and buy mobile phones, navigation systems, or groundreceivers for remote sensing satellite pictures, or leak-proof space pens, or arrange for a space-burial, though undoubtedly amounting to a sharing in the benefit of space exploration and use, still did not reflect the letter and spirit of the above Treaty. Those countries believed "that the practical value of article 1 laid in international cooperation in space activities. It was only through such cooperation that the benefits of outer space activities could be realized by all States".[85]

The conclusion that article 1 *obliged* the space 'haves' to engage in space cooperation with the space 'have-nots' found no sympathy with the former, who maintained that such an interpretation of the 'benefits' provision would infringe upon their sovereign right to choose whether, with whom and how to cooperate. Since 1986, for some ten years, the members of the UN committee on the peaceful uses of outer space, and more in particular of its legal subcommittee, have discussed a set of principles which would give more 'teeth' to the above provision to the benefit of the developing countries, while still respecting the rights of the space 'haves' to decide in each specific case on the identity of the partner and the extent of the space cooperation.[86]

(This discussion, far from having a negative impact on space cooperation in practice, may in fact have contributed to an increase in cooperative ventures: through the years, the number, size and scope of bilateral and multilateral space cooperation programmes have been impressive.[87] From this very

of the exploration and use of outer space for peaceful purposes ..." Art. 3 provides: "States parties to the treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the [UN], in the interest of maintaining international peace and security and promoting international cooperation and understanding." Finally, art. 9 states: "In the exploration and use of outer space, including the moon and other celestial bodies, States parties to the Treaty shall be guided by the principle of cooperation and mutual assistance ..." Note that there is a certain emphasis on scientific cooperation, basically the only type of space cooperation between the Western world and the communist countries realistically possible in the 1960's.

85. See Jitendra S. Thaker, *The development of the outer space benefits declaration*, XXII-I Annals of Air and Space L. 537-558 (1997) hereinafter referred to as Thaker 1997, at 539.
86. See *id.*, *passim*.
87. See *e.g. Highlights in space - Progress in space science, technology and applications, international cooperation and space law 1997*, A.AC.105/691, U.N. Office for Outer Space

phenomenon the argument arose that the formulation of guiding (binding) principles on space cooperation was - apparently - superfluous).

The discussion on the contents of the principles also made clear that the 'space powers' do not see article 1 of the Space Treaty as creating a legal obligation to give, share or cooperate when it comes to their space goods, services and technologies. And the end-result, a Declaration adopted by the UN General Assembly, reflects two basic considerations of a French-German proposal to the Committee along that line, *i.e.* (1) States are free to determine all aspects of their cooperation, and (2) States will choose the most efficient and appropriate mode of cooperation in order to allocate resources efficiently.[88] The Declaration, also referred to as the "Outer space benefits declaration", does encourage States with space capabilities to share the benefits thereof through cooperation with interested countries, and more in particular with developing countries, but it does not create nor aim at creating a legal obligation to do so. In fact, its adoption reinforces the view supported by doctrine that article 1 of the Space Treaty does not create such an obligation either.[89]

Applied to launching, an activity covered by the term "exploration and use of outer space", the above position would result in a negative answer to the question whether the article imposes an undisputed *obligation* on the U.S. government to
(a) share its launch technology with other countries ("all countries"), and/or
(b) permit such other countries to launch U.S. satellites, and/or
(c) permit any of those countries to perform launches from U.S. spaceports.

(And, for all practical purposes, 'other countries' would include, *a fortiori*, foreign private companies, on whose rights and obligations the Space Treaty is largely silent).

It should be recalled in this connection that the above activities also fall under the general heading of 'trade', which, if one approaches the matter from another angle, raises the question whether States have the right to discriminate

Affairs, U.N., New York (1998).

88. See Thaker 1997, *supra* note 85, at 551, 553. On Dec 13, 1996, the UNGA, by Resolution 51/122, unanimously adopted the *Declaration on international cooperation in the exploration and use of outer space for the benefit and in the interest of all States, taking into particular account the needs of developing countries*; for text, see *id*, App. 1, at 556-558.

89. See *e.g.* Bin Cheng, *The 1967 Outer Space Treaty: Thirtieth anniversary*: "In Article 1 of the Space Treaty on the subject of international cooperation, the space powers paid lip service to the developing countries. Some countries have ever since tried very hard to give Article 1 an excessively literal interpretation involving a legally binding obligation. Such efforts can hardly be said to have succeeded...", 23 (4/5) Air and Space L. 156-165 (1998), at 163.

in foreign trade between recipients of their goods and services and between the countries they wish to procure goods and services from. The answer to that question is yes, *unless* they have specifically agreed to impose limitations on that right. The prime example thereof is the 'package' of agreements concluded under the WTO umbrella. States *decide* whether and to what extent they give up the right to discriminate, between nationals and foreigners and amongst foreigners. And, though they increasingly liberalize world trade in goods and services, States do so after a weighing of the pro's and con's and starting from the legal principle that they don't *have* to give up their right to discriminate (*i.e.* the right to choose whom to trade with).
From that perspective, the above question may be phrased differently, *viz.* did the United States (or any other State for that matter) explicitly, that is, by becoming a party to the Space Treaty or to any other multilateral or bilateral agreement or arrangement, commit itself to trade with certain (or all) countries in specific (or all) sectors of the space industry.

As we saw above, the Space Treaty does not take away the right of member States to choose partners, to decide with whom to cooperate and share knowledge or whom to trade with. And the veritable plethora of bilateral agreements on space cooperation concluded since the advent of the space age has not changed the voluntary character of that cooperation.
The above brief GATS review has shown that the U.S., party to the GATS and the GPA, has refrained from making a commitment with respect to launch services and has excluded these services from the GPA. It had and continues to have the right to do so. An important reason for the U.S. approach is *national security,* a concept which *in internationalibus* is one of the most effectively used justifications for not trading (in certain goods/services) with certain countries.
In that connection, another arrangement should be recalled, that of the Missile Technology Control Regime of 1987/1993. The MTCR which aligns and coordinates national missile and launch technology export controls and in fact created a common - national/regional/global security motivated - 'we don't want to trade in these goods and technologies with you' front against all outsiders. Both this multilateral regime and the national export control regulations of the MTCR countries re-emphasize the right of countries to freely choose the parties they wish to do business with, *a fortiori* when it concerns goods, services and technology which, because of their high tech, dual-use character, possible or intended use and/or the identity of the end-user, bear a clear national security stamp.

In other words, it cannot be substantiated that there exists an obligation for space launch 'haves' to share launch technology, through sale or cooperation, with a space launch 'have-not', whether friend or foe.
Nor is there an obligation for satellite manufacturing countries to permit the sale and export of their satellites to a foreign customer or to license the export

of their satellite - whether government or privately owned - for the purpose of launching by a foreign entity.
Finally, nothing in present international/space law infringes upon the right of a State to decide whether and if so, under what conditions, a spaceport, which is domestically (government or privately) owned, operated and/or licensed, may be made available to foreign launch providers.

What remains to be discussed then is whether the above state of affairs is one that needs or deserves to be challenged or, alternatively, is acceptable as a *status quo*. This question will be dealt with in the last part of this study, the conclusions and recommendations (Chapter 5).