

# FUNDING THE HIGH FRONTIER: OLD LESSONS WE MUST ONCE AGAIN LEARN

JAMES E. DUNSTAN\*  
PARTNER  
HALEY, BADER & POTTS  
WASHINGTON, D.C.

## ABSTRACT

There is virtual unanimity among those intimately familiar with space exploration on why man has yet to begin a serious breakout from the surface of the Earth: The cost. Although great emphasis has been placed in engineering studies on developing ways to reduce the cost of transporting payloads to LEO, even the most optimistic technical solutions still leave us at least an order of magnitude short of providing the impetus for breakout. This paper concludes that the price of doing business in space can be lowered through three means: 1) use of the United States tax code to spur private investment in space through preferential treatment similar to that given to the railroad and oil and gas industries; 2) more effective use of the statutory authority granted NASA to create government/industry cooperatives in the mold of the Japanese MITI; and 3) generating short-term revenues from space enterprises by truly commercializing their nature.

## INTRODUCTION

Space has long been the province of national governments only. Since Sputnik was launched in 1957, the only effective participants in exploration of space and exploitation of its resources have been governments or quasi-government entities. From the U.S. perspective especially, "business" in space has not been conducted as a business at all, but rather as a sometimes incongruous series of federally funded programs, subject to both the uncertainties of budgetary cycles and the inherent inefficiencies of large bureaucratic organizations. No doubt, one of the results has been a spectacle unparalleled in the history of man producing phenomenal scientific discoveries and impressive spinoff technologies.

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\* Senior Associate, Space Studies Institute.

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The cost of such programs, however, has been tremendous, and there are those who continue to insist that the evolution of human knowledge and practical advancements to the human condition which can be directly linked to our exploration of space do not justify the past expenditures of public funds or the institution of new, equally expensive programs with ill-defined returns on the public investment.<sup>1/</sup>

Thirty years ago, the prospects of private economic potential from space were barely recognized.<sup>2/</sup> Today, the communication satellite industry alone, born with the space age, is a multi-billion dollar a year enterprise.<sup>3/</sup> Outside of telecommunications, however, the economic promise of space remains largely unrealized. Scientists and policy makers alike are becoming increasingly concerned as to the economic viability of the exploitation of outer space. Remedies for the high cost of doing business in space traditionally have centered around ways to lower transportation costs to Low Earth Orbit (LEO).<sup>4/</sup> To date, however, there has been insufficient analysis of a non-technical nature, i.e., ways in which traditional economic tools can be used to reduce the high price of doing business in space or the revenues from space can be increased so as to spur private investment in high frontier. This paper will address three areas of the cost/revenue engine which must power man's future in space.

## I. INCENTIVES FOR PRIVATE INVESTMENT IN SPACE

### A. THE UNITED STATES TAX CODE AS A TOOL TO SHAPE PUBLIC POLICY

Contrary to popular belief, the purpose of taxation by the United States government is not solely the raising of revenues to fund its programs. Rather, there are three general goals in today's tax regime: 1) the transfer of resources from the private to the public sector to finance government programs which benefit all citizens; 2) the redistribution of income between people in different economic circumstances (vertical equity), and between people in roughly the same economic condition (horizontal equity); and 3) the promotion of economic growth, stability, and efficiency.<sup>5/</sup> Indeed, some may argue that the Federal government has used (and possibly abused)

its constitutional taxation powers to attempt to remedy all ills in society (e.g., using tax reductions to stimulate short term economic growth in times of recession; levying excise taxes on such undesirable luxury items as alcohol and tobacco.)

It is upon this third goal of taxation that this paper focusses. Specifically, the first question asked is whether the United States government can use the Internal Revenue Code (IRC) to facilitate private entry into space. The second question is whether the United States government should use its taxing power to aid the breakout of human civilization into space. This analysis justifiably presumes that the United States has jurisdiction to tax activities in space of its nationals or of aliens receiving the benefits of U.S. space facilities, a subject beyond the scope of this paper. 6/ 7/

**B. SEVERAL INDUSTRIES CURRENTLY RECEIVE PREFERENTIAL TREATMENT UNDER THE INTERNAL REVENUE CODE**

In answer to the first question, it is clear that the United States government has the power to use the tax code to foster economic development and stability by granting special treatment to preferred industries. The Thirteenth Amendment to the United States Constitution is far-reaching in its conveyance of power to the Federal government to not only tax individuals and corporations, but to treat some individuals and transactions more favorably than others.

The congress shall have the power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several states, and without regard to any census or enumeration.

The United States government has not been reticent in using this power. Specifically, two industries have been singled out over the years for special treatment under the code -- the American railroad industry, and the American oil and gas industry. Nearly sixty (60) sections and subsections of the IRC are devoted specifically to these two industries.

Of particular interest to this study are those provisions which have fostered the creation of oil and gas partnerships, one of the most commonly used tax shelter in America. Congress' intent in enacting Sections 703 and 705, as well as other sections dealing with oil and gas partnerships, was not to create devices to shield income from the government. Rather, the impetus for their enactment was a clear congressional intent to spur private industry exploration for fossil

fuels in the wake of steadily and dramatically increased prices of foreign crude oil. Only in their application have these provisions allowed for the shielding of vast amounts of otherwise taxable income.

The provisions governing oil & gas partnerships are a prime example of the Federal government using the tax code to further a non-revenue policy goal -- that of reducing dependance on foreign oil. Congress obviously was and remains willing to forego certain tax revenues for some perceived greater good. Similarly, policy goals have clearly outweighed short-term tax collection goals in the way the IRC treats the profits of oil and gas (the recently repealed windfall profits tax, Section 4986 et seq.), tax credits given to railroad companies for the hiring of certain disadvantaged individuals (Section 51), accelerated depreciation treatment of many of the capital expenses incurred in the two industries, and special treatment to bankrupt railroad companies (Section 354).

**C. TREATMENT OF SPACE ACTIVITIES UNDER THE INTERNAL REVENUE CODE**

To date, only seven sections of the IRC specifically deal with activities in space. Three of these deal exclusively with treatment of international satellite systems (Sections 6231, 883, and 167(1)(3)). In addition, Section 861(e), which provided for special accelerated depreciation allowances for satellite systems, was repealed as part of the 1988 tax amendments.

The major sections of benefit to the space community today are those dealing with deduction of qualified research and experimental expenditures, and the Investment Tax Credit. Sections 30, 48, 168, 174, and 861 refer to the development of space vehicles and launch systems as the type of property for which these two deductions would apply. The one problem with the deductions allowed for R&D expenses contained in Sections 30 and 174 is that they can only be offset against income related to the business. Thus, new entrants in space development are severely hampered due to the fact that most will be required to expend huge sums in R&D over the first few years, long before they have an actual product to sell, thus generating income to offset the R&D expenditures against.

Finally, in probably the only section specifically directed at the space industry, Section 863 provides beneficial treatment for income derived for providing launch services to space under the foreign tax credit provisions.

**D. CONGRESS SHOULD ADOPT PROVISIONS  
WHICH ENCOURAGE INVESTMENT IN SPACE**

Although the IRC does recognize the existence of space as a situs of income generation (replete with foreign tax jurisdictional problems), to date the United States tax code has not been used to help shape space policy by providing special incentives to spur private investment in space. If keeping our railroads viable and protecting domestic oil and gas companies at the expense of revenue generation is a laudable goal, then equally laudable is the goal of exploitation of space resources and development of a space economy.

Development of even a nascent space-based economy would broaden the overall U.S. tax base, providing additional taxable income in the future. Further, because jurisdictional questions as to taxation of space income are not yet definitively settled, the country that interjects itself early into the area by providing near-term tax benefits which will encourage companies to conduct business in space under its auspices (a sort of "Liberian flag" concept), will be in the best position to claim jurisdiction to tax future income from space activities. If the United States does not provide preferential treatment now, other countries certainly will, with a possible result similar to that which has occurred with the off-shore banking industry.

Thus, the answer to the second question -- should the government use the tax code to influence space policy -- the answer clearly is yes. All that remains is a determination of what types of provisions should be enacted. What follows are a few examples of tax provisions based on those which govern the railroad and oil and gas industries.

1. Space Partnerships. Provide the same type of preferential treatment currently afforded oil and gas partnerships which would allow lenient loss deductions, and lenient profit recapture provisions. (Instead of dumping money down a "dry well," partnerships could dump money down a "gravity well."

2. Special Accelerated Depreciation Schedules. Allow the fastest depreciation possible so that capital expenditures can be written off quickly.

3. Longer Loss Carry-Forward Provisions. One of the major problems with the current code is the limited amount of time in which losses can be carried forward to offset gains. Because of the capital-intense nature of space development and the extremely long term needed to realize a return on investment, the normal capital markets simply have no incentive to invest in space

enterprises.<sup>8/</sup> Creating longer carry-forward periods would allow companies to recoup all of their capital expenditures and reduce the future income tax bite, should space prove to be as lucrative as some predict.

4. Allow for IRA-Type Individual Investments in Space Enterprises. Again, due to the capital-intense and long lead-time nature of space endeavors, private individuals have little incentive to invest their own savings in such enterprises. A provision that allowed for income-deference such as an individual retirement account and allowed carry-forward of the liberal deduction provisions outlined above would be a power investment tool. Some have suggested that the tax-deferment component of a "space-IRA" alone could supplant a portion of the social security system.<sup>9/</sup>

5. Provide Treatment to Bankrupt Space Companies Similar to That Provided Railroad Companies. The IRC provides special provisions for the exchange of stock and other securities of bankrupt companies under Section 354. A special subsection was added concerning railroad companies such that no income would be realized for such exchanges, even if the principal amount of any securities received exceeds the principal amount of any such securities surrendered. Because of the relative high risk each individual space venture will face, it is inevitable that some will fail. Rather than risk loss of the technology such failed ventures will often produce, they should be accorded the same preferential treatment as bankrupt railroad companies under Section 354.

**E. CONCLUSIONS CONCERNING USES OF THE  
TAX CODE TO SHAPE SPACE POLICY**

From the discussion above it is clear that the Federal government has the power to help fuel the breakout of mankind into space through judicious use of the tax code. Moreover, justification exists for providing preferential treatment to space business as much, if not more, than to the railroad or oil and gas industries. The provisions suggested herein do not represent a radical departure from present income tax theory or the existing IRC, they merely extend a portion of the special treatment given certain industries to space.

The major obstacle to such use of the tax code is obviously the present federal budget situation. Expanding "loopholes" in the IRC in light of the current federal deficit presents a major obstacle. The prevailing argument should be that giving up short-term taxes will create a far larger tax base in the future. Unfortunately, Congress has demonstrated its reluctance to focus on

long-term goals when it can cut short-term costs, especially in the space area.1/ The current administration's approach to taxes and revenues, however, is not diametrically opposed to the provisions set forth above, as the Bush Administration is relying heavily on growth in the economy as a whole to provide a larger economic base which may be taxed. Even in today's economic climate, therefore, the ideas expressed above are worth pursuing, especially as they relate to the following two sections.

## II. DOES THE UNITED STATES NEED A MITI?

### A. RECENT CALLS FOR A U.S. MITI

In January, 1989, an advisory committee on superconductivity issued its report on the state of U.S. research and development in the field of superconductivity.10/ The committee compared the scientific achievements of the United States and Japan in superconductivity research, and found that the two countries compared favorably. In the area of preparedness to commercially apply superconductivity research, however, the study found the United States to be lagging far behind the Japanese. After describing the haphazard approach of the United States, the committee concluded at page 8 of its report:

In contrast the Japanese government laboratories have a long tradition of materials work done closely with industry, and the Japanese government has put in place through [MITI] a structure that will support, coordinate and sustain the various individual industrial efforts in Japan as the Japanese companies work their way through the early stages of this new technology and look for applications.

In direct response to its perception of a successful Japanese program, the committee recommended establishing a U.S. equivalent to the Japanese Ministry of International Trade and Industry (MITI) to combine the efforts of government and industry on this critical technology. Such "Superconductivity Consortia" would involve research universities, government laboratories, and companies actively working in superconductivity.

Given this recent report, and other suggestions that the United States should do as the Japanese do in developing and commercializing technologies, should we view space development in the same light? This section will discuss whether the U.S. should establish a MITI for space.

### B. The Japanese System Generally is Much Better Equipped to Commercialize Technology

#### 1. The Defense Link in U.S. Research and Development Programs

One of the critical findings made by the advisory committee on superconductivity, but nowhere recited in the conclusions or recommendations, is the fact that the dominant percent of the U.S. superconductivity research budget is controlled by the Department of Defense, whereas in Japan, the majority of funding is controlled by either the Japanese Science and Technology Agency (STA), or MITI. A system whose major impetus is the development of a technology for military (and usually classified) purposes cannot hope to develop commercial applications as quickly as a system where the goal, at the outset, is the development of commercial applications of a new technology.

More important than the finding that much of the direction in the United States superconductivity program comes from the Pentagon, is the committee's recommendation that the development of Superconductivity Consortia be in addition to existing programs administered by DOD, NASA, and others. Thus, all the creation of Superconductivity Consortia would accomplish would be the establishment of an additional bureaucratic layer in the overall U.S. program. The major funding, and thus the impetus, would continue to come from the Department of Defense.

This paper is not designed to cast any aspersions at the Department of Defense nor its critical historical role in development of technology, especially those in the aerospace arena. Nevertheless, if we consider ourselves now to be in a "race" with the Japanese to develop commercial applications of superconductivity, our overall strategy is flawed. It is not that technologies developed by the government cannot have useful purposes in the private sector, it is merely that such uses are secondary or "spin-off" benefits of the research, and not the primary motivating factor for the basic research itself. This historical difference between the United States and Japan would appear to be the single largest obstacle to the United States establishing an effective counterpart to the Japanese MITI.

#### 2. Antitrust Impediments to a U.S. MITI

One other difference between the Japanese system of private enterprise and that of the United States is an American repugnancy toward industry cooperation. Born in the late Nineteenth Century from the monopolization of the oil, railroad,

steel, and automobile industries, these competitive market policies are codified in the Antitrust laws of the United States.<sup>11/</sup> Those laws make it illegal to conspire to monopolize a trade or business, and make it illegal for competitors to freely share confidential information in order to further the position of either or both in the market.

The Japanese private enterprise system contains no such built in bias. In fact, after near decimation in World War II, Japanese businesses had no choice but to cooperate with government and with each other to bring that economy back from the ashes. Rather than an inherent suspicion toward business cooperation, then, the Japanese have instead fostered cooperation through the establishment of MITI and other government institutions which are not merely bureaucratic layers in the R&D cake, but rather effective conduits for a country whose technological sophistication is rapidly outstripping the rest of the world.

Although there is a natural reticence toward private entity cooperation in the United States, in recent years the Federal government has effectively redrawn the line as to how much business cooperation it will allow, mostly in response to the Japanese. It is extremely doubtful, therefore, that the government would ever invoke the antitrust laws to stop the development of a technology consortium. Further, once the Federal government has stamped its approval on such consortia, the chances are small that a competitor denied access or otherwise injured by the actions of the group could sustain an action under the antitrust laws.

The true impediment to the development of a U.S. MITI, therefore, is not antitrust laws, but the fact that such government/industry consortium have heretofore been developed after the bureaucratic battlelines for control of the project have been drawn, resulting only in an additional, and often cumbersome, layer of administration.

#### C. NASA'S UNIQUE POSITION IN RESEARCH AND DEVELOPMENT

NASA's statutory authority grants it broad powers in fostering the research and development of commercially viable technologies rarely seen elsewhere in government. Congress fully understood the research mission of NASA when it established the agency in 1958.<sup>12/</sup> Section 203(c) of the NASA Act allows it to enter into certain agreements, and establish cooperative ventures with university and industry, outside the normal procurement procedures,<sup>13/</sup> implemented by the Federal Acquisition Regulation ("FAR").<sup>14/</sup> Under Section 203(c), NASA is authorized:

"(4) . . .to accept unconditional gifts or donations of services, money, property, real, personal or mixed, tangible or intangible;

(5) . . .to enter into and perform such contracts, leases, cooperative agreements or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate, with any agency or instrumentality of the United States, or with any States, Territory, or possession, or with any political subdivision thereof, or with any person, firm, association, corporation, or educational institution . . .;

(6) to use, with their consent, the services, equipment, personnel, and facilities of Federal and other agencies with or without reimbursement, and on a similar basis to cooperate with other public and private agencies and instrumentalities in the use of services, equipment, and facilities [of NASA] . . ."

Not only does Section 203(c) of the NASA Act allow for the avoidance of the bureaucratic morass known as the procurement process, but more importantly allows that any monies paid to NASA pursuant to agreements entered into under Section 203(c) need not be deposited in the general treasury, but may remain within NASA.<sup>14/</sup> The only caveat is that such agreements must fall outside the reach of the procurement statutes, which govern "procurement contracts," "grant agreements," or "cooperative agreements." In simplistic terms, in order for a transaction to qualify under Section 203(c), services must flow in both directions, and monetary compensation for either party must be ancillary to, and not the sine qua non of the agreement. In spite of its statutory authority under Section 203(c), the vast majority of all purchases made by NASA, and contracts to provide launch and other services to private entities, are governed by the general procurement process.<sup>15/</sup>

NASA has nevertheless used Section 203(c) in a few instances to enter into cooperative ventures or "Joint Endeavor Agreements" (JEAs) with universities and private industries. The 1969 NASA-AMES/University Consortium and Interchange Agreement established a near MITI-like cooperative between NASA, several universities, and a number of small businesses.<sup>14/</sup> Similarly, NASA has entered into a JEA with Space Industries to launch its Industrial Space Facility (now termed Commercially Developed Space Facility, or CDSF) on a deferred cost basis in exchange for workspace within the CDSF.<sup>7/</sup>

Thus it appears that the type of consortium called for by a government advisory panel in the field of superconductivity could easily be implemented in the space arena by NASA as part of its statutory mandate. Such a consortium could also avoid the gravest pitfall -- administered through NASA, the Defense Department link (including procurement provisions and classification of information and technology as sensitive) could be avoided.

Notwithstanding this ability, most of the commercialization of space technology has been accomplished after-the-fact, in the traditional American way,<sup>16/</sup> rather than "engineered in" at the outset, more akin to the Japanese model. Indeed, the spin-off technologies commercialized from NASA research is impressive.<sup>17/ 18/</sup> Should the "call to arms" arise, however, against the eroding technological edge to the Japanese or others in the space area as it has in the computer and superconductivity fields, inevitably the "call" will be followed shortly by a demand for the establishment of a MITI-like consortium to speed commercialization and private sector economic viability in space activities. This "call" can be answered easily by NASA through its statutory powers under Section 203(c). The establishment of such a consortium is discussed more fully in the last section of this paper.

### III. GENERATING REVENUES FROM SPACE: HOW LONG DO WE HAVE TO WAIT FOR THE CRYSTALS TO GROW?

At any given gathering of those involved in the space community, discussions on bringing down the cost of space exploration and exploitation invariably center around ways to lower cost-per-pound to LEO. If any consideration is given to eventual revenues to be gained from space, those revenues are either assumed to be nascent for many years to come, or assumed to come only from government purchase of space facilities and products, which does nothing to lower the overall cost of exploration and exploitation. (Rather, if one also assumes that the government is the only entity conducting the exploration and exploitation, the total cost of "doing business" is actually increased by any plan which includes such government payment to private entities for products or services.)<sup>19/</sup>

From another standpoint, the way we conduct our space programs is highly inefficient for a number of reasons. NASA's mandate is to develop technologies to explore space, not exploit it. As such, NASA has no overriding incentive to keep the costs of a program to a minimum ("use it or lose it" budgetary mentality). There is no absolute need for NASA to earn a profit from space, nor does NASA possess any real experience in

space entrepreneurship (NASA's attempt to justify the Space Shuttle and its existence to Congress helped cause the Challenger tragedy.) NASA does not have to answer to stockholders. In short, NASA is a very large, inherently (economically) inefficient organization. Instead of making money in space, NASA is required to trudge up to Capitol Hill for congressional appropriations hearings each year to defend against further cuts in its budget.

One startling example of NASA's missed opportunities for generating revenues should bring the problem into sharp focus. Over 50-some manned space launches, NASA has never charged a television network for the rights to televise those missions. ABC, CBS, and NBC have always been invited along for the ride, free of charge. In and of itself, this does not seem particularly earthshaking. That is until one realizes the commercial value of those broadcasts. Television today is a multi-billion dollar enterprise. Advertising time during Super Bowl XXIII ran a staggering \$1.4 million a minute. ABC paid the International Olympic Committee \$309 million for the rights to broadcast the 1988 Calgary Winter Olympic Games, and then spent an additional \$390 million to produce and air its 94.5 hours of sports spectacular. The price tag for a 30 second spot in prime-time (8:00 p.m.-11:00 p.m. EST) was \$600,000.

What does this have to do with space (other than the fact that the television networks lease satellite transponders to relay their programs)? Simple. NASA is precluded by its statutory mandate from charging for the right to broadcast space missions. Private companies are not so constrained. Private enterprise in space has this distinct advantage over government, an advantage which, in the case of publicity rights alone, is worth billions of dollars. Publicity rights extend beyond just broadcast rights, and private enterprise may well be able to enter joint ventures, barter agreements, or otherwise reduce the cost of space activities through selling slices of the publicity pie.

Do such commercialization concepts insult the dignity of the U.S. space program? Picture this, then. A spacefaring country actively markets for profit its launch services around the world, and will carry anyone who can afford to pay for its services. That same country sells high resolution remote sensing data of all parts of the world. That same country licenses the use of the likeness of its space vehicles to be used in Swiss commercials. That same country allows its employees to tape television commercials while on board operating space vehicles.

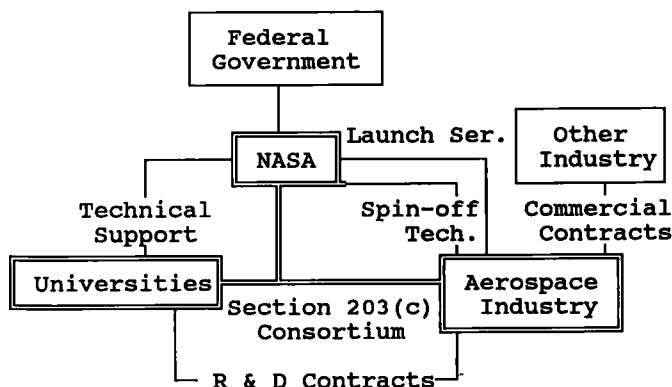
Sound impossible? It is happening today. The country? None other than the ultimate capitalist basher, the Soviet Union, which realizes that it cannot continue to support its aggressive manned space program without an influx of revenue. If the concept of the Space Shuttle taking off from the Kennedy Space Center with bumperstickers plastered over its external tank turns the collective stomachs of the space community, then it is time to rethink priorities. This country, as the Soviet Union, cannot continue to fund space exploration and development in the same manner as in the past. We must find sources of revenues in addition to cost-reduction methods if we realistically hope to fuel human breakout into the solar system. Given the choice between a vibrant, but commercialized, space program, and a continually shrinking space program, the choice should be obvious.

But would we be selling our souls in the process? One can think of it in this way: We may be selling our souls in commercializing all aspects of space development, but we would be selling it to ourselves -- selling off publicity rights and other intangible assets merely would spread the cost of human breakout across all of society, instead of resting it solely on the back of an underfunded agency with questionable political clout to acquire the public resources it needs to fulfill its mandate.

**IV. SOUNDING THE KLAXON:  
PUTTING THE PIECES TOGETHER**

The three subjects discussed above may appear to lack an intuitive nexus. But like a three-dimensional puzzle, when properly arranged, the three pieces discussed above could produce something far greater and more appealing than the individual parts or the sum of those parts.

**CHART 1: A SPACE CONSORTIUM  
FORMED PURSUANT TO SECTION 203(C) OF THE NASA ACT**



What follows is a model for a new space consortium between NASA, academia, and private industry, created under the statutory mandate of Section 203(c) of the NASA Act. The consortium would be created to maximize the following:

- 1) Avoid the time and expense consuming procurement process wherever possible (although competitive bidding within the industry representatives of the consortium should be encouraged);
- 2) Where possible, funnel all beneficial tax transactions such as qualified research and development expenses to private industry to allow it to reduce its overall tax payments (enactment of the additional IRC provisions discussed above would provide an even greater benefit to industry);
- 3) Allow private enterprise to commercialize all aspects of space development to the extent reasonable.

Chart 1 below depicts the relationship between the parties, and highlights some of the transactions only possible through this type of consortium. A summary of the benefits to each segment of the consortium is also listed. The end result is a single entity made up of multiple members, each able to exploit facets of space development not efficiently available to other members of the consortium.

**Benefits to Each Member of Consortium**

**NASA**

- 1) Decreased cost of R&D
- 2) Increased demand for and revenues from launch and technical services
- 3) Increased political clout

**Universities**

- 1) Access to NASA Facilities
- 2) Access to Industry
- 3) Possible share of profits
- 4) Prestige

**Industry**

- 1) R&D Tax Write-offs
- 2) Expense write-offs
- 3) Revenues from commercialization
- 4) Purchase of "cheap labor"

## V. CONCLUSIONS

In the final analysis, we must return to the title of this paper, "Funding the High Frontier: Old Lessons We Must Once Again Learn," heretofore unexplained. This paper contains a single message, possibly obscured by the constant need to consult tax code provisions, antitrust laws, and federal procurement statutes:

In order for this country to continue to be the leading nation in space, it must do what it has always done best, and that is make money.

Any way one analyzes the future of space development, the result is the same. Only those who can afford it will be able to take advantage of the vast resources of space and its potential for monumental improvement of the human condition. And only those who can find a way to make money in space (be it through tax breaks, revenues from hard products, or revenues from intangible property rights) will be able to lead the breakout of humanity from this fragile planet. If the Soviet Union is turning into a capitalist in space, maybe it is indeed an old lesson we must once again learn.

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