Section 9 - BEYOND THE CHAPTER

Beyond the Chapter

Sometimes it IS hard to see the forest for the trees. As we become immersed in the day-today details of grassroots space activism, it's easy to overlook the importance and the benefits of being part of the larger NSS organization. While your local NSS chapter can be one of the most effective parts of the space movement, it can't reach its full potential unless it is part of an integrated, efficient organization. This section of the Handbook is devoted to those aspects of the National Space Society that allow you as individual members and chapters to extend the impact of your efforts beyond your local area.

NSS HISTORY

This colection of Articles appeared in AD ASTRA (Nove/Dec, 1994) under the banner ìNSS Turns 20.î They are included here as an overview of the origins, history, and traditions of the organization.

The 20th anniversary of the National Space Society prompts us to look back on the history of the two organizations which merged to form the National Space Society in 1987. Most NSS members today have never been members of either of the two precursor organizations ó the National Space Institute and the L-5 Society ó and may not be aware of their history. ó David Brandt-Erichsen, Secretary of the National Space Society

GROWING TO A POSITION OF STRENGTH

By Hugh Downs

In 1961 President John F. Kennedy launched the Moon race, which stunningly showed what American technology and determination could do. When, after eight years, we landed the first Apollo team on the lunar surface, the race was over. Just as serious scientific effort began, with immeasurable potential benefit to humanity, the funding closed down to a trickle. The last Apollo flights were canceled and Americaís space momentum was lost.

Long before the launch of Apollo 17, the last Moon mission, Wernher von Braun recognized that something had to be done to keep the importance of ongoing space activity before the public mind. The sort of organization that could do such a job would need to be independent enough to view critically all aspects of NASA policy and implementation.

Terry Dawson and six others formed the National Space Institute, a nonprofit educational membership organization. Von Braun asked me to join the Board of Directors during the formation of the Institute and I became Vice President in 1974. When Wernherís illness became serious, I was elected President.

After the merger with the L-5 Society in 1987, as the National Space Society, we began to move forward at a better pace, and I have had the pleasure of chairing the Board of Governors. I am pleased and proud to say that this Board has been more actively involved than any Board of Governors I have been associated with.

The 1989 meeting in Scottsdale, Arizona, heard member Tom Paine, (NASA Administrator 1968-70), cite ìfavorable prospects for international cooperation in the 21st century.î He believed the Cold War would end without nuclear Armageddon, that declining military expenditures would free capital, enabling international organizations like Intelsat to ìbring nations together in challenging high-tech enterprises.î He foresaw the rerraforming of Venus and Mars with such techniques as genetic engineering of bacteria, and the birth of long-range plans for launching robotic probes to temperate planets circling nearby stars.

In 1991 the governors met in Washington, D.C., and attended a celebration of the 30th anniversary of Alan Shepardís sub-orbital flight. Two years later, NASA Administrator Dan Goldin addressed the governors,

bringing them up-to-date on the status of the Space Station project. Robert Bocek of McDonnell Douglas briefed the Board on promising technologies for single-stage-to-orbit launch vehicles.

The Society has done very well since the merger. Its eighty chapters around the world continue to be very active. Our views on space policy are sought after in Washington; we are regularly asked to testify on Capitol Hill and are often quoted in the media.

Hugh Downs is Chairman of the Board of Governors of the National Space Society.

WERNHER VON BRAUN AND THE NATIONAL SPACE INSTITUTE
By Frederick I. Ordway, III

When first approached in 1972, Wernher von Braun was briefly hesitant about a National Space Institute. ìAnother talking club,î was his spontaneous reaction. Then, for a change, he found himself on the receiving end of a campaign of persuasion and he was converted ó in fact he became the most active, persuasive, and successful promoter the Space Institute ever had. The Institute was officially incorporated as the National Space Association in June 1974. The articles of incorporation were written and filed by Harry S. ìTerryî Dawson. Von Braun was elected President in August of that year, and Charles Hewitt was appointed Executive Director on 1 December. Because there were so many associations on the Washington scene, the name was changed to ìNational Space Instituteî in April 1975.

In July 1975, while still in relatively good health, with the Institute moving forward at a vigorous pace, von Braun addressed the Board of Directors and Board of Governors at the first annual meeting. Congressman Olin E. Teague from Texas, a member of the NSI Board of Governors and a very enthusiastic supporter of the space program fro many years, had von Braunís address read into the Congressional Record. Noting that the National Space Institute was chartered to communicate the benefits of space to the public, he commended the speech to all his colleagues. Excerpts of von Braunís address follow:

ì...I know that you are all here...because you believe, as I do, that a new organization is needed to communicate the benefits of our national space program to the American public. The National Space Institute, which we are formally launching today, shall perform that function. It is a nonprofit, educational, and scientific organization. The main role of the National Space Institute will be that of a catalyst between the space technologist and the user. It will attempt to bring to the attention of people the new opportunities offered by advances made in space experiments and space techniques. It will study the feasibility of the application, and the potential uses of space technology as it relates to other human activities.î

Despite health problems, toward the end of 1975, in an interview with Washington Star staff writer Vernon A. Guidry, Jr., von Braun took the opportunity to make a pitch for the NSI. ìYou are president of the National Space Institute,î Guidrey began their conversation, ìand youíve said that its purpose is to create broad public support for a more energetic space program...Do you really have a high chance of success?î ìWell,î von Braun replied, ìIím fully aware that public interest is a very fickle thing. One day, the word is ëMoon or bust,í and the next day it is ëletís clean up the rivers.í People get so much information today that the priorities in [their] minds swing back and forth. The Apollo flights to the Moon were demonstrations of immense capabilities and potential, but in some respect they may be compared with Lindberghís flight across the ocean. I think space is now entering a maturing period where it will be less gee-whiz, less sensational, but it will become more a part of everyday life ó just like the airlines.

ìAs you get older and approach retirement age, somebody else picks up where you left off,î von Braun continued. ìThere were great men long before the first big rockets were built. And we are just building on their legacy. We want to make sure that this legacy can now be passed on to the next generation, the people who will really pick the fruits of the trees we have planted. I think the silliest part of the decay of the public interest in space is that...we planted this orchard, and we nourished it and fertilized it and watered it and gave it all our tender loving care. And now, the time comes when the fruits can be picked ó and they

donít want to play the fruit pickers! That is where I think the young generation can make the greatest contribution ó pick the fruits.î

When von Braun died in June 1977, Hugh Downs became Chairman of the Board and after a time Ben Bova assumed the presidency. After Hewitt departed in 1980, Courtney Stadd served for a period as General Manager. The Institute was then led in turn by executive directors Dr. Mark R. Chartrand (to 1984) and Dr. Glen P. Wilson.

Frederick I. Ordway III was a founding member of NSI and is a former member of the NSS Board of Directors.
Portions of this essay appear in Chapter 12, ìThe Fairchild Years,î from Ernst Stublinger and Frederick Ordwayís Wernher von Braun: Crusader for Space (Krieger, 1994). All quotations were extracted from interviews conducted by Ordway between 1985 and 1989.

NATIONAL SPACE INSTITUTE: THE MIDDLE YEARS, 1980-1984
By Mark R. Chartrand

I came to NSI as Executive Director in the fall of 1980. In that year, before the first flight of the space shuttle, there was some hope that the space program was on the rebound after the post-Apollo cutbacks. The membership level was at an all-time high. NSI membership activities and direct benefits on the other hand, were at an all-time low. The Board of Directors was, for the most part, moribund. A very few members of the Board, notably, Harry S. Dawson, James Fletcher, Edward Z. Gray, Earl Hilburn, and Hugh Downs, were concerned about the organization.

Membership numbers were at a high point because during 1979 NSI had made an agreement for a direct mail campaign with Kathy Keeton, publisher of the new science magazine Omni, to offer a package combining NSI membership with an Omni subscription. While many people signed up, when the time came to renew they had little commitment to NSI, and renewal rates ó the life-blood of any membership group, fell dramatically.

I embarked on three major efforts: to revive and revise the Board of Directors into a more productive body, to begin to provide some real membership benefits and to restore NSIís position as the premiere public space advocacy organization.

Membership benefits were a problem, because this meant spending money. With the advent of space shuttle flights, I began the shuttle launch tours enjoyed by hundreds of members. We began a series of quarterly membership meetings around the country, taking NSI to the members, with talks by astronauts and other space experts. Over the years, several thousand members attended these gatherings, often held at NASA facilities.

We needed to strengthen NSIís image in the eyes of policy makers and we also needed our own regular publication. Courtesy calls were made to NASA officials, members of Congress, senators, and aerospace executives. We renewed contacts with other space organizations and we talked to congressional space committee staff arranging to testify before relevant committees and subcommittees on space issues. The strategy worked: the National Space Institute came to be viewed as an unbiased source of information to government, industry, and the press on space.

In 1982, we approached the largest circulation space magazine, Space World, about a joint endeavor. Space World became our official publication and the major membership benefit of NSI. Some years later, the Society introduced its own publication, Ad Astra.

One other major activity was the Dial-A-Shuttle program. NSI was approached by NASA to take over a program which the agency had begun to provide live coverage of shuttle missions to news organizations. Anyone could call a 1-900 telephone number and listen to communications between Mission Control and the

astronauts. Unfortunately, callers often heard nothing because the shuttle was out of range (up to 80 per cent of the time during early missions!). NSI took over the program and added live commentators. During some missions, as many as five million people from all over the world called Dial-A-Shuttle and the program garnered great publicity for NSI.

Among the people who became associated with NSI during the early 1980s was Dr. Glen P. Wilson. As a staffer for Lyndon Johnson in the Senate in the 1950s, he had helped to write the NASA Act. He went on to become head of NASAís Education Office and when I decided to step down in 1984, Dr. Wilson took over as Executive Director of NSI.

Dr. Mark Chartrand, Executive Director of NSI from 1980-84, is a consultant and freelance writer in Baltimore, MD.

A MOVEMENT IN TRANSITION
By Glen P. Wilson

ìWeíre running on empty down here,î I wrote to Ben Bova and the NSI Board in 1984-85 ó the NSI was chronically short of funds. One thing that kept us alive during that period was a small contract with NASA to help establish the Young Astronaut Council in which the Reagan White House was very interested. Our reputation in Washington was enhanced because of the professional way in which we handled our end of the bargain.

John Yardley, Vice President of McDonnell Douglas, and a group of high level aerospace executives wanted to find a way for the aerospace industry to assist in building anon-government, non-industry, membership group to help promote and support the nationís space program. They hired a consulting firm which, after considerably study, recommended that the NSI be core organization for this group. We began to plan for a major membership campaign. Unfortunately, our first mailing was just about ready to go at the time of the Challenger accident and the next year was filled with NASA bashing. Nevertheless, we were able to build the membership from a low of about 7,000 to 12,000.

Negotiations had begun with the L-5 Society for a possible merger. The NSI had a strong presence and good reputation in Washington, while the L-5 Society was better known for its many activist chapters around the country and its annual space development conferences. It seemed like the perfect marriage but negotiations were difficult and drawn out, and the merger was nor formalized until April 1987.

The merger brought the L-5 staff of three from Tucson, which w more than we could accommodate in our rented offices across the street from NASA in Washington, D.C. We prevailed upon the Wernher von Braun Foundation (a supporting foundation of the NSI) to supply the necessary funding for the down payment on a new headquarters building on southeast Pennsylvania Avenue. We moved during June 1987.

One of the most contentious points of the merger negotiations was the name of the new organization. The matter was put to a vote of the membership and in the spring of 1988, by an almost two-to-one margin, the National Space Society was chosen over the Space Frontier Society.

Glen P. Wilson was Executive Director of NSI from 1984-87 and Executive Director emeritus thereafter.

THE L-5 SOCIETY
By David Brandt-Erichsen

The two organizations, the National Space Institute and the L-5 Society, resulted from the work of two great space pioneers: Wernher von Braun in the case of the National Space Institute, and Professor Gerard K. OíNeill in the case of the L-5 Society. Although OíNeill himself was not involved in its leadership, the L-5 Society was founded around his ideas.

Whereas von Braun produced designs for rotating space stations in the 1950s, OíNeill took the idea a step further. In 1969, OíNeill, a physics professor at Princeton University, envisioned large rotating space habitats with an Earth-like environment on the inner surface, with artificial gravity produced by the rotation. OíNeill was one of the first people to ask the question: given current technology (in 1969), how large could such a structure be built in zero gravity? When the calculations came back with an answer in the tens of miles, OíNeill thought he was onto something significant. A key idea in OíNeillís thinking was that such large structures could be built out of material mined from the Moon or asteroids to avoid the high cost of launching out of Earthís much larger gravity well.

By late 1974, OíNeill had linked his ideas with Peter Glaserís Solar Power Satellite (SPS) concept. SPSís are large solar collectors in space that can beam energy for use on Earth or in space. OîNeill suggested that they be manufactured out of nonterrestrial material, providing an export product potentially valuable enough to make an OíNeill settlement economically self-sustaining.

In 1973, George Hazelrigg, also of Princeton, suggested to OíNeill that the L-4 and L-5 Lagrangian libration points might be ideal locations for the large habitats that OíNeill envisioned. (The idea of locating a large structure at a libration point can be traced back further to the 1961 novel A Fall of Moondust by Arthur C. Clarke). L-4 and L-5 are points of gravitational equilibrium located on the Moonís orbit at equal distances from both the Earth and the Moon. An object placed in orbit around L-5 (or L-4) will remain there indefinitely without having to expend fuel to keep it in position.

OíNeillís first published paper on the subject, ìThe Colonization of Space,î appeared in the journal Physics Today in September, 1974. A number of people who later became leaders of the L-5 Society got their first exposure to the idea from this article. Among these were Keith and Carolyn Hensco in Tucson, AZ. The Hensons corresponded with OíNeill and were invited to present a paper, ìClosed Ecosystems of High Agricultural Yield,î at the 1975 Princeton Conference on Space Manufacturing Facilities, which was organized by OíNeill. A sign-up sheet at the conference eventually made its way to the Hensons, who also obtained OíNeillís mailing list. The Hensons incorporated the L-5 Society in August of 1975, and sent its first newsletter to those two lists.

The L-5 Society was founded partly because of Arizona Congressman Morris Udall, who at the time was a serious candidate for President of the United States. Carolyn Henson arranged for a meeting between OíNeill and Udall and Udall liked OíNeillís ideas. Udell asked for public recognition of his support, and a newsletter was needed for this. The first issue of the L- News was published in September 1975. Consisting of just four pages, it included a letter of support from Udall. The newsletter also said that ìour clearly stated long range goal will be to disband the Society in a mass meeting at L-5.î

It is difficult today to realize the excitement that was generated in the early years of the L-5 Society. Every issue of the L-5 News contained reports of new studies and progress in the field. Underestimating the enormous weight of political inertia that would need to be overcome, L-5 members at the time thought that they would really get the chance to personally live in space within their lifetimes.

As an illustration of the optimism of the day, the L-5 News reported on remarks by John F. Yardley, then NASA Associate Administrator for Space Flight, before a meeting of the National Space Institute on 21 January 1976. Yardley was quoted as saying, ìI think it would be a cinch to inhabit the Moon, and it would also be a cinch to inhabit L-5...I know it is mind-boggling, but still, a colony of 10,000 people at either place would be very straightforward...Both of these could be done by 1990 if there was appropriate public support.î

Excitement over the L-5 scenario probably peaked in 1977. That year produced the third consecutive NASA summer study on Space Settlements and Industrialization Using Nonterrestrial Materials. (The study was published in 1979 as NASA Publication SP-428, entitled Space Resources and Space Settlement). In this study, L-5 director and physicist J. Peter Vajk and others developed the most detailed scenario yet for production of Solar Power Satellites from lunar materials. The scenario called for a space manufacturing facility which would house 3,000 workers in a rotating facility constructed from refurbished shuttle external

fuel tanks. The study identified exactly how many launches of the shuttle and a shuttle-driven heavy lift vehicle would be required, and concluded that the project could begin in 1985 and have three SPSís on line by 1992. Unfortunately, this scenario was based on two assumptions that later proved incorrect: that the shuttle would significantly reduce the cost of space launch, and that it would fly 60 times per year. The scenario did, however, serve as a significant ìproof of concept.î

Nineteen seventy-seven was also the year that the publication of two major books brought in a new wave of members. One of these was OíNeillís classic work, The High Frontier (an updated edition of which is currently available for $10 including shipping from the Space Studies Institute, P.O. Box 82, Princeton, NJ 08542). The other was T.A. Heppendheimerís Colonies in Space. On first seeing Heppenheimerís book in the bookstore I thought it concerned things 200 years from now. In the middle of the second chapter it hit me: this is something we can do right now! I immediately joined the L-5 Society, started a local chapter, and have remained active ever since.

One of the best successes of the L-5 Society was its opposition to the United Nations Moon treaty in 1979-980. It was thought that the ìcommon heritageî provision of the treaty would stifle development of nonterrestrial resources, and that the treaty would authorize warrantless searches of space facilities (which did not go over very well with people who actually wanted to live in space). The L-5 Society hired Washington lobbyist and lawyer Leigh Ratiner, who gave intensive training to a number of L-5 activists on how to walk the halls of Congress and talk to staffers. Notable among these were Eric Drexler, Chris Peterson (both of whom are current NSS Directors), and Marcia Allen. The successful effort centered on convincing the Senate Foreign Relations Committee to oppose signing of the treaty. Since nobody was lobbying in favor of the treaty, it proved possible for a small but well-reasoned opposition to sway the day, and the U.S. never signed the treaty.

The L-5 Society did not fare as well in its next political battle, the fight over Solar Power Satellite funding during 1980-1981. The Department of Energy had spent about $25 million on SPS research from 1977 to 1980, but the Carter administration eliminated SPS funding from the budget for fiscal year 1981. L-5 Director Mark Hopkins initiated an intensive lobbying campaign to get Congress to restore the $5.5 million originally allocated for SPS. Hopkins almost single-handedly set up a nationwide phone tree within a few days, using a membership database of close to 10,000 members.

The technique involved calling members in important areas and asking them to call other members in their area to alert everyone to call key congressional offices. I was appointed the first national phone tree coordinator for what eventually became the NSS phone tree. It was an effective lobbying tool. One key Senate staffer said that his phone was constantly ringing and that for an entire week the SPS issue would give him no peace (the Senator involved did switch his vote in favor of SPS). In the end, however, it wasnít enough. The SPS program was canceled. Its loss also signaled the loss of realizing the L-5 dream anytime soon.

OíNeill did not live long enough to achieve his hope of retiring in space. He died prematurely in 1992 after a long battle with leukemia. But the dream lives on. Itís our job to speed it up.

David Brand-Erichsen served as Secretary of the National Space Society and now serves on the Board of Advisors.

NSS: THE NEXT GENERATION
By Glenn H. Reynolds

As we celebrate our twentieth anniversary we should be looking ahead. One important lesson of the past twenty years is that we shouldnít exaggerate our ability to predict what will happen in the future. The original OíNeill space colonization plan was founded on two assumptions that were thought unassailable at the time: that energy prices would continue to rise, and that the cost of getting into space would continue to decline. Unfortunately, just the opposite happened ó energy prices today are near historical lows, and the

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cost of getting into space has actually gone up. That is why things havenít gone as OíNeill originally projected.

In the past few years we have seen the fall of the Berlin Wall and the appearance of the Red Army Chorus singing ìSweet Home Alabamaî on MTV. These things should make us doubt our ability to predict the future! Nonetheless, I offer some thoughts on where the space movement will go, and what it will accomplish over the next twenty years.

SPREADING THE FAITH

The past twenty years havenít brought all bad news. There has been some real progress. Most importantly, our ideas have gone from ìkookyî to almost taken for granted. From CNN to Parade magazine, space colonization stories are commonplace. The idea of space colonization has been endorsed by Congress, in the Space Settlements Act, and by governmental figures as diverse as Ronald Reagan and U.S. Supreme Court Justice William Brennan. Even Bill Clinton has signed on to the idea. The biggest barrier to getting our programs across at the congressional level isnít that Congress members and staff regard space colonization as too silly to support, but that they now regard it as so inevitable that they donít always see why it needs boosting.

When space colonization was first suggested, it was considered a bizarre notion just this side of science fiction. The idea that people could have an interesting life in a space station was seen as unlikely ó who, we were asked, would want to live in such a controlled environment? Nowadays, of course, the proliferation of integrated shopping/entertainment/residential malls answers that question: lots of people do.

There is also a growing believe that the Earth is too small and fragile a basket to hold all of our eggs. Awareness of the cometary impacts that accompanied the extinction of the dinosaurs ó not to mention this summerís celestial fireworks extravaganza on Jupiter ó has caused most thinking people to reflect on the need to spread humanity beyond the Earth. Without space settlements, humanity remains vulnerable to Earth-bound catastrophes, whether human or natural.

And the growth in environmental consciousness, a product of the photos of Earth from the Moon during the Apollo era, has led to a new way of viewing our place in the universe. Instead of seeing environmentalism as focused on protecting the status quo, many have come to see it as dedicated to encouraging the flourishing of life. It is only a small step from this view to the believe that it is humanityís role to spread life throughout the cosmos.

Weíve come a long way in gaining acceptance for our belief in space settlement over the last twenty years and I think weíll see far more progress over the next twenty. It shouldnít be hard to convince kids who have grown up watching Deep Space Nine that it is possible to have an exciting life on board a space habitat. It wonít be hard to convince anyone who has seen the Earth-sized fireballs resulting from comet strikes on Jupiter that humanity needs to be able to protect itself from such calamities. And it should be easy to persuade those who celebrate ìbiodiversityî that the ultimate biodiversity consists of life spreading throughout the solar system and beyond.

APPROACHES

Beyond convincing people that space settlement is a good idea, how do we get there from here and what lessons from the past can be applied to the future? The first lesson is that prediction is risky. We should be opportunists, more than planners. If we are to see human beings living and working in thriving space communities, it will be because it has gotten cheaper to get into space, and because we have found ways of making enough money there to let space settlements support themselves. This is more likely to happen because of commercial activities than because of government programs, although the right kind of government programs can help commercial activity get off the ground.

In the past five years, commercial space business has doubled to about six billion dollars. If it continues to grow at this rate, it will be nearly $200 billion 20 years from now. It will probably grow faster than that, however. As costs go down, new markets are created. As new markets are created, companies have greater incentive to lower cost. This dynamic hasnít taken hold yet, but when it does it should promote more rapid growth ó as we have seen in other fields like personal computers, VCRs, and so on. Eventually, very large markets that are currently kept closed by high costs will open up. Such markets (like space tourism) will produce an enormous expansion in space activity.

The key is getting to this takeoff point, and that will be the most important task for space activists over the next 20 years. It has already become a significant task. NSS has worked hard on such projects as the Launch Services Purchase Act, the Patents in Space Act, the Omnibus Space Commercialization Act, and the Clinton/Gore ìReinventing NASA procurement reform projects. (For more on these efforts see ìPlanting the Seeds of Commercial Space,î Ad Astra, Jan./Feb. 1993). But there is much more to be done. We should encourage government and industry efforts to lower the cost of getting into space. The Delta Clipper program is the best-known example of such efforts, but there are many others. Just as early government investments in research and development spawned the civil aircraft industry, similar efforts can promote a booming commercial space transportation industry. But to work, they must be focused on lowering costs. Space advocates will have a very important role to play by keeping up the pressure to make this so óand in pushing for work on ìbreakthroughî technologies.

THE SPACE MOVEMENT

The space movement itself will change over the next twenty years. In the beginning we were an idealistic band of outsiders with little knowledge of how to wage a political campaign or influence legislation. We are still idealistic but not outsiders. Space advocates have become recognized players in the political game, courted by presidential candidates, members of Congress, NASA officials and industry. People have gone from not caring what we think, to wanting to know what we think before they act. We often are asked for input before policies are formed.

Overall, this is good but two-edged. While we want the kind of clout that other established public interest groups (like the NRA or the Sierra Club) have, we want to retain the unique vision and idealism of our youth. We donít want to become another self-perpetuating Washington institution. As we become bigger and more powerful over the next twenty years it will be up to you, the members, to help ensure that NSS remains focused on the ultimate goal: t he creation of a truly spacefaring civilization.

Of course, over the long term I would like to see NSS become splendidly obsolete, with its posh headquarters on Epsilon Indi III drawing criticism from those who wonder why such an organization is necessary when the Lesser Magellanic Cloud is already becoming oversettled ó and with Ad Astra offering the obvious answer in its special ìOn to Andromedaî issue. Over the next 20 years, as over the last, let us work to make this dream a reality.

Glenn Reynolds, a law professor at the University of Tennessee, is an NSS Vice President and co-author (with Prof. Robert Merges) of Outer Space: Problems of Law and Policy.

WHY WE DO - AND MUST - GO INTO SPACE
By Jeffery G. Liss

The smart answer - more than a quarter- century after Apollo 11 landed on the moon - to why we go into Space, is "we must"

Space Pays! - The Space Program Has Paid for Itself

It is a myth that "we can't afford Space." Confirmation that "Space pays" may be found in the 1989 Chapman Research report, which examined just 259 non-space applications of NASA technology during just 8 years, 1976-1984, and found more than;

- $21.6 billion in sales and benefits,

- 352,000 (mostly skilled) jobs created or saved,

- $355 million in federal corporate income taxes

Other benefits, not quantified in the study, included; state corporate income taxes, individual personal income taxes (federal and state) paid by those 352,000 workers, and incalculable benefits resulting from lives saved and an improved quality of life.
The 259 applications represents only about 1% of an estimated 25-30,000 Space program spinoffs. The benefits were in addition to benefits in the Space industry itself and in addition to the ordinary multiplied effects of government spending. When Space program money was spent, new industries were left behind to generate more money (e.g., computers, electronics, fabrics, composites, ceramics, metallurgy). Without the focus of our space goals, such cutting-edge technologies would not have emerge.

Long- Term - Expanding Our Resources Base

We can't keep subdividing Earth's resource pie; we need to make the pie bigger. It is the promise of resources from the Moon, Mars, asteroids and the Sun that makes Space such a hope for our future. World population is likely to double within 40 years and re-double shortly after that; world resources will not. In Space solar power is infinite (reducing the need to use forests and oil and coal merely for fuel and eliminating the pollution they cause), as are asteroid metals. These unlimited resources would enable us to reduce the plundering of our planet. But to obtain these resources will require large structures in space and the rockets to get there. Learning how to build those things to obtain such space resources is a long step-by-step process. If we want to have those rescues before it is too late, we have to start now.

Non-Economic Aspects

The Value of the Frontier**.** Space indeed is the next frontier, ***both*** of geography and technology. History teaches that no society has ever gone wrong betting on the frontier. This nation was invigorated spiritually, and prospered economically, by challenging and finding new uses for one frontier after another. Our massive subsidies of roads, railroads, air travel, and other technology in order to exploit them were amply rewarded.

Effect of Leadership on Earth. Leadership in Space does translate to influence on Earth. We should recall, first with Sputnik and than with the U.S. Echo balloon and the Soviet Mir space station, how much Earthbound watchers developed awe, respect and then deference to the nations whose tangible symbol was visible overhead nightly.

Effect on Students. The *manned* Space program has provided among the most significant elements in directing our young people into math and science. It reaffirms both a belief in the future and encourages our students that they, too, can shape it. Dropping the program would leave an unfillable void.

Defense Against Comets and Meteors**.** Numerous comets and asteroids cross Earth's orbit every year, most not yet discovered. In 1994 the world witnessed the cataclysmic collision with Jupiter of the Shoemaker-Levy 9 Comet, which, had it struck the Earth, might have caused planet-wide upheavals like those that extinguished the dinosaurs. Had Shoemaker-Levy been on course for Earth, the time between discovery and impact was so short that, with our existing space capability, we could have done nothing to prevent the collision. A thriving space program - especially one with the technologies and capabilities

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developed to support humans in space - will give us at least a fighting chance to stave off such an occurrence should it arise.

Why Send People

Inspiration. Only humans in space have the power to stir our souls and inspire us to reach for the best within us.
Limitations of Robotics. Off-Earth resources cannot be developed or exploited by robots alone. They lack flexibility. People will be needed to build, maintain, fix the machinery - and to tinker on the spot to make the next logical developments.
Stimulus of Needing to Protect Humans. Many Space technologies would not have been developed for unmanned probes.
Medical Advances. What we already learned about the human body in space - where physical disabilities of aging, bone and muscle deterioration, occur quickly - promises to benefit every human on Earth. We can't learn more without having people up there for long periods.
Environmental Benefit. Moving potentially hazardous technological and biological research off the planet could help protect Earth and its biosphere.

Conclusions

The ultimate purpose of going into space is to live and work there - just as the ultimate purpose of exploring the New World was colonization - and not merely to sit back on Earth and cogitate about what automated spacecraft report back. We do not send our cameras to the Grand Canyon; we go ourselves. We sent Lewis and Clark not just to describe the American West, but to learn where and how people could live there. America grew by sending out seeds in different places and then filling the spaces with trade and industry and new ideas. People have always found ways to prosper from their environments, however harsh, and we will do so on other worlds. We cannot begin to live and work in Space without first going there. And, it is human destiny to escape the cradle of our planet of birth.

What ever his original motives, Pres. John F. Kennedy ultimately will be most remembered for setting this nation on the road to space. That vision was his legacy to the following generations. Pres. Clinton has an opportunity to build that legacy by re-launching America's space program with bold venture to send humans to Mars. We need a space program that goes somewhere.

Volunteers

Throughout the history of NSS, most Society-level work has been done by volunteers. Eventually we were able to hire an administrator, and usually also have a few full-time and/or part-time paid staffers at our Headquarters. However, all the members of our Boards of Directors, Governors and Advisors, the officers, Chapter Coordinator, Phone Tree Coordinators and those who work on special projects, such as producing this Handbook, writing articles and taking photographs for *Ad Astra*, and helping out at Headquarters, are volunteers. The National Space Society owes much of its impressive record of accomplishment to the long hours of dedicated work by these volunteers.

YOU CAN MAKE A DIFFERENCE! To participate in these efforts let Headquarters know if you have a specific skill, talent, area of expertise, or useful contacts that you are willing to share with NSS. Since it is likely that you are already busy with local chapter activities, you may want to consider how something you are already doing or are interested in doing can be useful on a Society level with a bit more effort. A good example of this is the Curriculum Design Group, made up of members who have experience and interest in gathering, surveying and producing education materials about space development.

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Regional Activity

In the course of L5's development, provisions were made for Regions with set boundaries and elected regional representatives to the Board of Directors. Most of the regions are too large to allow frequent in-person contact, so smaller informally organized networks within your Region may develop. Some members may also want to set up a separate local, state or (outside the U.S.) national organization modeled after the highly effective Washington State Citizens For Space to monitor and educate your governmental representatives.

Regional activity can be simple: writing, visiting and exchanging newsletters with a neighboring group. Members can contact or even join other chapters in areas they have occasion to visit for business or personal reasons. As you get more organized, you can consider a regional newsletter, conference, or finding ways to share resources and have joint projects. New groups will get more than they contribute to such activities at first, but all chapters and NSS itself will be strengthened by this now-developing aspect of chapter activity.

Your Regional Organizer is your representative on the NSS Board of Directors. He or she can keep you informed of Board actions, express your ideas and concerns to the NSS leadership and coordinate communication and activities within your region. To do so a Regional Organizer might want to set up a network of interested people, perhaps by asking each chapter in the region to appoint an "Assistant to the Regional Organizer".

You might also have a Regional Resource Chairman to survey the resources available in your area and consider how they might be shared, with the primary goal making the widest possible use of them with the minimum of expense to the chapters. Examples of resources are: local speakers, libraries with NASA literature, locations for exhibits, meetings and conferences, slide show loans, and lists of key people sympathetic to our goals, PR possibilities, and space-related companies. You could develop strategies for working with other regional groups and make contact with astronomy organizations, professional groups, state education organizations & institutions, women's and environmental groups, state science teachers organizations, and any well-funded groups that might be interested in joint activities.

When considering regional cooperation, take into account the strengths of each chapter and what resources are available to each, in order to develop a regional strategy. It may be wise for some chapters to specialize in what they are most interested in or best equipped to do. Always work with your Regional Organizer and the Chapters Coordinator to stay in touch with developments within the entire Society.

A few suggestions gathered from other chapter activists:

- Make it a major goal to parent new chapters in your area. It makes a big difference to have other chapters nearby.
- Group to group aid: Each successful chapter adopts a fledgling, or two chapters with complementary strengths establish a sister-chapter relationship.
- Host a yearly state-wide picnic (arrange to get a shelter!).
- Consider whether there can be economies of scale by combining some projects, although often the best economy will be to do something on the Society level and not just within your region. Too regional an outlook can be as limiting as a chapter-only one.

Remember that you also have great importance within NSS as a source of direct information; the NSS leadership, the Chapter Coordinator or Headquarters can't possibly know your area as well as you do. They also have no way of knowing about the great things you do unless you take the time to let them know. It may seem like a waste of valuable time to document your chapter's accomplishments in detail, but it is the best way to insure that your hard work will continue to pay dividends in the future. You may even be surprised at how much you really have accomplished, once you see it written down! NSS chapters are notorious for underestimating their accomplishments.

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NSS Conferences

Every member can participate directly on the Society level by attending the yearly NSS International Space Development Conference. A common way that regional activity gets started is when members from an area get together informally at an NSS conference. Chapters should encourage as many area members as possible to attend, and coordinate car-pooling, sharing of rooms and expenses, etc.

Take an address book along, collect cards, and attend the informal gatherings where you are likely to meet others from your region or those who share an interest in similar projects. You can discuss problems and ideas, and perhaps have the opportunity to get to know some of the NSS leadership. It is much easier to work together through phone calls, the mail and computer networks once we meet and talk to our fellow chapter activists in person. We discover that our goals and problems are not unique, and that others have experience that we can benefit from.

Inside NSS

What's '*Inside NSS*' for?

Inside NSS can be the fiber that binds together all the far-flung segments of NSS, HQ-to-chapters, chapters-toHQ, and chapters-to chapters around the country and the world.

On the national level, this publication is dedicated to providing NSS's most active members with current, factual and (as much as space permits) full information about the actions officially taken or not taken by NSS leades and staff - a source to refer to instead of rumors. Being part of the information flow should help members to (a) feel a more integral part of the organization, (b) have a better feel for which leaders are doing (or not doing) what, (c) be aware of all the different things involved in running NSS, so that they are better prepared to make suggestions and assume leadership roles at both the national and local levels, and (d) realize that they, too, have good ideas and, in fact, might even be better than current leaders.

Some have suggested that this coverage amounts to "washing dirty linen" in public. It might be noted the *Inside NSS*, being a "house organ", does not report the "really juicy stuff" - just the bare facts of what was officially proposed, done and not done. More important, if our members are pleased with what our leaders are doing, they should appreciate the increased coverage. If they are embarassed by those official actions, then they should complain to those leaders, they should not "shoot the messenger". *Inside NSS* is but a conduit to give members the data to which they are entitled so that they can form their own opinions.

We do have a "Letters and Commentary" forum for members ideas and opinions, on both NSS and space matters.

On the chapter level, *Inside NSS* allows chapters and individuals doing interesting things to (a) pass the info along to others, so they can try them in their own regions without having to re-invent wheels, and (b) enable
members to begin recognizing which NSSers in other parts of the country are actually doing things.

Inside NSS also devotes significant space to science and technology articles -- not what most will find in their own local media, but articles about (a) possibly breakthrough technologies that our most active members might be interested in considering and possibly promoting, and (b) less publicized developments that impact on the exploration and settlement of space.

Finally, on an individual level *Inside NSS* reminds members that they are not
alone out there in thinking space IS important to our future.

Who Reads '*Inside NSS*' First

Various persons have inquired as to how the content of *Inside NSS* is selected and reviewed. The answer is as follows: The Editor, who answers to the Chair of the Executive Committee and to the Board of Directors, selects and makes a final edit of all material, some of which is solicited, some of which is

unsolicited. Considerations include: (a) interest to the readership; (b) customary journalistic standards, (c) the fact that Inside
NSS IS a "house organ," and (4) any constraints that might be imposed by NSS By-laws and Rules (e.g., in connection with elections).

If it appears that certain material might violate or impact negatively on NSS policies or best interests, the Editor attempts to run them by appropriate NSS officers for their input before the issue is set.

Finally, each issue is available to the Chair of the Executive Committee for review before going to the printer. The prior Chair, during the current editor's first year in that role when the publication was bi-monthly,
generally chose to review them himself but delegated that task once to the Executive Vice President. The current Chair of the Executive Committee has generally delegated that task to both the Executive Director and Program
Director.

Persons with ideas and views either the same or different from those found in *Inside NSS* are encouraged to submit them to our Letters and Commentary section.

Editorial Submissions

Submit all editorial material to Jeffery G. Liss, 180 N. LaSalle St., Suite 2401, Chicago, Il 60601; Fax 312-782-4033; e-mail JGLJGL@aol.com.

Make '*Inside NSS*' Your Chapter Newsletter

Is your chapter one without a newsletter? If you have your own, is your editor over-burdened, or is the publication too small, too infrequent, with very little about what is going on elsewhere in NSS and the space world? If so, make *Inside NSS* your chapter newsletter -- only $8/yr per member -- and we publish your meeting notices.

How to Subscribe

The publication is sent to each NSS chapter free, and to individual subscribers. Subscriptions (12 monthly issues) are available for $10.00 per year. $8.00 for chapter groups. Send your check and mailing address to Natonal Space Society headquarters.

Regional Events

There are many reasons to have a regional event. What do you want to accomplish? Before you begin to make plans, your group must list specific goals. These will help you to decide the size, form, atmosphere and location of your event and if it should include members only or outside individuals and groups as well.

formal or informal?

A regional event can be an informal gathering of chapter and non-chapter NSS members from all or part of your region for a picnic, pot luck dinner, tour or field trip. With modest investments of time and money members will have the opportunity to get to know each other or follow up on contacts, reinforce friendships made at NSS conferences and get projects started.

A more formal regional conference can be a day-long or full weekend event organized for one or more reasons. A good way to get started is to attend or consult with those who ran and those who attended other regional conferences.

how big?

Your gathering can be just for a couple nearby chapters, perhaps as a work session for a joint project at a location that will allow as many members as possible to attend. However, if your goal is to establish a regional network or to share fresh ideas, you might want to include a large enough area so that most of the attenders will not already know each other.

A smaller percentage of your members would be able or willing to travel farther to a conference for your entire region, unless costs are kept to a minimum, maybe by meeting on a local college campus. Conversely, you may choose a more elaborate (and expensive) conference structure and location if one of your goals is publicity or interacting with the business community.

when?

Attendance at a regional conference is highest if it is held in the fall, opposite the spring NSS Internationsl Space Development Conference. This also gives you a chance to get together twice a year. If you are not going to have a yearly conference, you might chose a year when the NSS conference is at a distant location. Since regional conferences are becoming more common and a number are now planned as yearly events, you should check your dates with neighboring regions.

planning

Begin by gathering, preferably in person, a group of people in your region who are interested in holding a regional event. Identify any who have relevant experience, contacts, etc. Decide upon and clearly define the goals and objectives for the event. Then make a list of things that must be done and who can do them. You might consider how best to include those chapter members who can not or aren't inclined to attend an NSS conference.

Every so often before the conference, the main players should get together and try to predict what could go wrong and plan for it ("potential problem analysis"). Also in these sessions, restate the goals and objectives. If you hold a conference, state these goals and objectives up front to the people attending. Reiterate them occasionally and ask if they are being met.

Whatever form you choose for your conference, make sure it sets a positive atmosphere and encourages interaction among attenders. Weekend events often begin with an informal socializing activity Friday evening where those attending can get to know each other. If your conference includes two distinct kinds of people, such as NSS members and area teachers, you should take special care that they are made to feel comfortable with each other and can interact.

workshops

Saturday morning workshops can spark the beginnings of specific projects early enough in the conference to allow organizational details to be worked out among those interested.

A workshop differs from a lecture in allowing and encouraging the direct participation of everyone attending. It is a good way to teach a skill using trial runs and hands-on experiences. Our volunteers are in need of training in management, public relations and political skills, and the effective use of graphics, audio-visual media and computers, etc. A conference that is designed to include members of a specific group might feature workshops for them, such as a demonstration of specific space-related activities for elementary students for an educator-oriented conference.

exhibits

You may want to have an area where regional organizations, companies and individuals can have exhibits. A fee can be charged for commercial ventures. A book seller, for example, might bring space-related books, to help defray the cost of the conference.

Members and chapters can also can set up exhibits to sell their merchandise or to display projects that they want to share with others. This can help cut down wasteful duplication of effort, and multiply the impact of our best ideas. Such an exhibit could be coordinated with one or more workshops on developing and using materials effectively. Members should be reminded to bring cameras and items such as:

Printed material: sample newsletters, membership cards, surveys, questionnaires, business cards, information sheets designed for the general public, the media, prospective members and new members, booklets, sample correspondence and form letters, press releases with resultant media coverage, organizational materials, and good uses of slogans, mottos and quotes.

Exhibit material: signs, posters, banners, logos, artwork, and photos of things that could not be brought along, such as large items, models or entire exhibits.

Audio-visual items: slides, transcripts, slide programs, videotapes, visual aids, transparencies and flip charts.

Merchandise with ordering info.: buttons, pins, patches, even non-space items as examples.

Space education: sample materials, course outlines, student projects and photos or videotapes of activities.

Bad examples: some of these things that failed us even though we spent a lot of time and money on them, to help others avoid making the same mistakes and to get help analyzing why they didn't work and how to do better.

You might even want to have a little healthy competition between chapters in a region for the best slide show script, video, art or exhibit boards. Be sure to have respected and knowledgeable judges.

survey

If you want to hold another conference, give those who attend this one a survey form to fill out. Ask a lot of questions about the conference activities, organization and facilities and leave room for written suggestions. This input will help to both identify future topics of interest and find out what could be done better. Listen to your customers!

Projects

There is no shortage of good ideas for things that NSS should be doing to make your job easier and your efforts more productive. A few of these projects, such as this Chapters' Handbook, are being done and more are in the works. What we hope to develop is a system whereby priorities can be set, volunteers with the necessary skills recruited, methods and timetables chosen and funding arranged where possible. Members and chapters interested in specific projects should discuss them with their Regional Organizers and develop proposals that cover how and by whom the work will be done, estimated time and money costs, and how the project will contribute to Society goals. The Board of Directors and our officers need this information before they can see how your suggestions fit into the needs of the chapter system and the entire Society.

Working with Headquarters

As chapter activists we all understand the importance of getting the most out of our limited resources. The time of our small Headquarters staff is one important resource that we can all help to use more efficiently.

An especially vital, but time-consuming, task is the processing of dues and membership information. PLEASE use the membership form supplied in an Appendix of this Handbook. Fill out a form for EACH new or renewing member with all the requested information. When the staff has to look up a Zip code, decipher the information you send or write to you about it, it keeps them from other work and increases the possibility that the membership will not be processed properly and will have to be corrected in the future.

If you send a letter to HQ that covers more than one item of business, it will help if you include a list, so each item can be checked off as it is taken care of. Otherwise something important can be easily overlooked.

Please update HQ as necessary on your current contact address and telephone number to be listed in *Ad Astra*. Many people, including members of our Board of Directors, try to contact the chapters when they are in town. They rely on the accuracy of the information in our chapter listings. It is also nice to know that the periodic mailings of the Chapter Actions are reaching their proper destinations.

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