BRINGING SPACE STUDIES TO “THE PEOPLE”

ABSTRACT

For too long the field of space studies has remained a secret, known to only a select few. Most people are unaware of the plans which have been laid for outer space development. As it stands, the various fields which make up the outer space development regime are developing and expanding in ways where only a few elite companies, individuals and countries are likely to benefit, in meaningful ways. This is undemocratic and likely to repeat patterns of massive inequality between countries and between people. This historical pattern will perpetuate unless those currently left out are engaged. This situation flies in the face of space law. Specifically, The Outer Space Treaty of 1967. This Constitution for outer space states that “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”. This paper sets forth key steps for creating a public awareness campaign to engage the general public in knowing about various emerging space industries, and it outlines strategies for enabling people to apply this knowledge in ways which they deem relevant for themselves. I suggest focusing on K-12 and university students as a starting point. The space community must find ways to engage more people into knowing about outer space development.

1. OUTER SPACE DEVELOPMENT

The term used herein, “outer space development” involves a culmination of forces – historical, legal, ideological, institutional, political, economic, psychological and structural all operating together in the post Cold War era so that space commercialization and privatization are widespread accepted norms.¹

Most people outside the outer space development community have never heard of the International Astronautical Federation Congress. They are unaware of the extent to which plans have been made to colonize outer space. Most people do not attend space conferences, and they do not know about the opportunities which exist in the myriad of outer space fields. The main goal of this paper is to suggest ways for space experts and professionals to make the general public interested in outer space and more aware of what is to come, as humankind begins to
complete the process of colonizing outer space as a final frontier. Outer space development themes can be used to improve the quality of life for K-12 and university students as a starting point for eventually “touching humanity”. Space technology has been creating new industries faster than the speed of light. Yet, most people only become aware of the implications of space industries as consumers wanting to purchase or use goods and services produced. A prime example of how space technology and space industries have touched humanity in the past are cell phones, the Internet, cable and satellite television, and debit card transactions. Although these widely used goods and services are produced through the space industries, most people are unaware of this link. Space industries have remained vague and elusive within the mindset of the general public around the world. This is in spite of the tremendous impact that it has had on the global political economy and wealth creation. Democratic governments such as India and United States must begin to include more people and diversify this elite process of space industry creation, in order to spread the vast opportunities emerging as new space industries emerge.

1.1 Emerging Space Industries

A pattern exists whereby U.S. space legislation and policies have set the pace for space commercialization trends. Over time, space commercialization and privatization patterns became ideological and institutional norms. Consider how satellite telecommunications, remote sensing, space transportation and launch systems, space stations and commercial spaceports have now become prevalent industries in the global economy. Widespread international acceptance for commercialization of space has created social and behavioral patterns akin to legal precedent. It is now international custom for countries and general publics around the world to accept the commercialization and to some extent, privation of space activities. With this reality, the geostationary orbit has been already colonized or “developed”. This was the first phase of outer space development. It has already happened. More importantly, several new space industries are in the process of emerging - private space tourism, private space travel, commercial spaceports, commercial space hotels (space stations) and eventually commercial space settlements.

Recently, a new trend is being set by U.S. policy. In 2004 a new policy was instituted in accordance with the President’s Commission Report which lays the foundation of U.S. development of the outer space territory. Also in 2004 a new U.S. law was passed facilitating the legality of private space travel as a new industry being called “space tourism”. In addition the NASA Authorization Act of 2005 made funding available to carry out the New Vision U.S. Space Exploration Policy. This policy, to a large extent calls for more participation from the private-sector in space exploration and other programs. Already a critical number of space entrepreneurs have paved the way towards new space industries, as they did during the satellite telecommunications revolution during the 1980s and 1990s. This is only the beginning of a new trend towards further space commercialization and privatization.

The result so far has been millions of dollars are being offered through various prizes to spur increased privatization of space. For example the $10,000,000 Ansari X Prize and many other cash prizes are being offered to spur space entrepreneurship/space privatization. Examples include, the NASA Centennial Challenges Prizes ($100,000,000), the America’s Space Prize ($50,000,000
million), the Heinlein Prize for Practical Accomplishments in Commercial Space Activities ($500,000) and the NASA Ralph Steckler/Space Grant Space Colonization Research and Technology Opportunity involved awards totaling $1,000,000. Entrepreneurs have started developing private spaceship development firms and are selling tickets to trips to outer space.

Given the pattern whereby U.S. laws and policies foster industry growth, followed by international acceptance, it is likely that we are witnessing the beginning of commercial outer space settlements. In other words, outer space development (colonization). A good way to start integrating the outer space development regime (space industries, space universities, government space entities, and international organizations) is by applying strategies to include more students who are currently unaware and therefore uninterested in outer space. We must commit ourselves to finding ways to include those located at the bottom of the socio-economic structures for example, Navajo and Hopi children living on isolated reservations, Dalit and African American children in similar circumstances, who are born into situations where they lack access to privileged knowledge-contact arrangements which generally determine which young people will make it into “top” careers. The children of people historically prevented from participating in privileged arenas must be included this time in order for the Outer Space Treaty to be upheld.

1.2 Foreknowledge of Industry Creation

Today most people, around the world, use goods and services produced by satellite telecommunications technology, benefiting only as consumers. Most people know about the Bill Gates story; however few realize the connection between advanced computer technology systems and space technology-space industries. It seems that Bill Gates and a few others understood key things about the satellite telecommunications-computer industry and were able to apply that knowledge in a way that made history.

2. EQUALITY AND “THE PEOPLE”

Great nations proclaim the importance of upholding democratic principles such as equality. For the most part “the people” provided the funds for space research and development and technology. However, “the people” seldom benefit from new industry creation in significant ways. Moreover, too often school curricula are trivialized and students are dumbed down instead of being pumped up to dream and to excel in life. More people from the general public must be brought into the elite circles of knowledge found within the outer space development community. Specialists within the various outer space fields must begin today to give considerable thought to ways to teach their disciplines to K-12 school children and to college students. Abilities, skill sets, belief systems, understandings and attitudes shared by members of the International Astronautical Congress and highly trained specialists in emerging space industries must be highlighted, taught and broadcast until they are rooted into the consciousness of parents, teachers, students, children and more members of the general public. This will increase the possibilities that budding abilities, gifts and talents are recruited, nourished and developed, applied and connected with caring, interested members of the various outer space professions. Subjects such as a math, science, writing, reading comprehension, social sciences, languages, technology must be presented to pupils in fresh engaging ways to make them come to life. Space has been known to engage and interest students, and it is time to take these possibilities to a place
beyond mere fascination and engagement. It is time to take students to a new level - actual meaningful participation in outer space development resulting in tangible career opportunities for people historically left behind.

More people, particularly students, must be inspired and informed of patterns and links which exist within the field of outer space development in order to be placed in the position of being aware of things before they happen. More people need to be included in the planning stage of space industry creation, which may proved to be as powerful as the industrial revolution, as this process continues to evolve into a new frontier of development.

Being fully aware of the critique of neoliberalism and globalization, I am also aware that free market ideology and neoliberalism are dominant operators in the global economy. Despite the realization that “development” scenarios have had negative and detrimental effects on the environment and have created vast inequality gaps between rich and poor, “developed” and “developing” nations and North and South, these processes are steamrolling onward with little successful resistance. Will this continue into the final frontier? It seems so. Critiques of neoliberal free market development schemes focus on current problems created by development scenarios which harmed general public around the world and only benefited a few elites. I believe we can get it right this time and avoid many of the foreseeable problems which typically occur when a territory is “developed”. By considering past problems and by including more diverse views as we develop the final frontier, we may be able to create a fair, equal and democratic outcome. I believe that this is what the framers of the Outer Space Treaty of 1967, the Magna Carta for outer space, intended when they stated: “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”.

2.1 Adding Outer Space to School Curricula for a Better Future Society

The idea of enhancing democracy through curriculum design is not new. Others have argued that “democratic empowerment” and participation require that students are engaged in society in ways which will enable them to fully experience citizenship. This well established principle must now be applied to outer space development. We as a global society must pursue a curriculum relevant for emerging trends which will drive the global economy in years to come. School curricula do not cover the cutting edge subjects discussed at the International Astronautical Federation Congresses, however, they should. This process must be facilitated this year. Space experts, in all categories, need to begin the hobby of designing and implementing special projects for schools to incorporate space studies into regular school curricula for the educational enrichment of K-12 and university students in all countries. Space experts must teach their areas of expertise as a form of experiential knowledge – as a lived knowledge. This will make outer space realistic to people who have been socialized to see outer space as fantasy or as too far out of reach for them.

The first step toward accomplishing this goal is to expose students, teachers, administrators, civic leaders and public officials to cutting-edge research which highlights emerging industries in the field of outer space development. This can be done by setting appointments with teachers and school administrators and doing presentation on the relevance of space activities and new technologies. Space experts must make
teachers and school official aware and concerned about the need to make students aware of upcoming trends, which will enable them to prepare, at an early age, to take advantage of this knowledge in ways to ensure that they can prepare to excel in engaging futures in fields uniquely inspiring to them.

Systematically engaging students, teachers, administrators, civic leaders and public officials in discussions and making presentations and workshops and sharing research materials, will increase awareness of the importance and understanding the role that outer space development has played and will continue to play in the global economy. This includes uncovering insights on which industries, companies, goods and services are in the process of evolving, and what this will mean in terms of future careers, skill/talent development, and educational preparation in order for students will prepare to meet industry demands within the next twenty years.

In the U.S., there is an ideology that everyone is entitled to live the American dream; it is a cornerstone of our democracy. Yet, very few people are able to achieve this dream. The best way to achieve the American dream is to be a pioneer or one of the first to gain an expertise in an important field. Space industries have dominated the global economy for several decades. Experts in telecommunications such as Bill Gates, Paul Allen, Jeff Bezos and others have achieved the America dream by knowing what would come, well before most other people. I am proposing sharing my research on emerging trends in the space industry with students so that they can select interest niches to excel in at an early age.

In the good ole USA we are experiencing a problem – we are failing to motivate many of future generations to excel or succeed in education. We have struggled with many legislative initiatives such as the No Child Left Behind Act of 2001 and the American Competitive Initiatives of 2006 and 2007. Still, many schools have failed to meet the standards set forth in these types of policies. Some states have even lost their school charter. In addition, high school drop out rates is shameful in our country. Our young people, the students, are our future. Yet, only a select few are ever introduced to infinite opportunities and potential opportunities existing within the myriad of outer space fields. In other countries, children are also left out of the outer space development industry.

Until and/or unless young people/students around the world (in both space faring and non space faring nations) are taught to take hold of future trends, before industry saturation, patterns of inequality will continue and grow. Outer space is in the process of being developed and many will be left behind. The field of outer space development has been known to only a few elites. This is undemocratic and is likely to repeat patterns of massive inequality gaps. The pattern will continue unless those historically left out of the knowledge process are made aware and are engaged in meaningful ways.

2.2 Providing Access to Students: Mapping Curricula Integration Strategies

Space experts must invest time establishing meaningful long-term relations with teachers, students, school administrators, government officials, deans, professors and university students. Schools and universities must come to understand the importance of preparing young people for the emergence of outer space development. Pupils must be educated with an understanding of the new technologies,
new laws and industry creation patterns and their likely impact and foreseeable implications on society. Students must learn to translate this type of information to design unique and excellent futures for themselves and their abilities. Students must also learn to translate this information into motivation to excel in fields yet emerging in order to become leaders in specialized fields of expertise.

- Make a habit of arranging meetings and discussions with school officials, teachers, parents and political and civic leaders

- Re-shape existing attitudes that treat outer space as irrelevant for most people

- Share your expert knowledge with a wider audience outside of the outer space community

- Be instrumental in redefining school curricula

- Increase student and teacher awareness and the ability to predict and anticipate future trends in outer space fields

- Assist teachers in designing lesson plans

- Be a guest speaker at schools and in university classrooms, be riveting, inspiring, exciting and give students a reason to dream and be passionate about their future

- Convince K-12 elementary school leaders, administrators, civic leaders, deans of universities and professors of the importance of including students in the knowledge nexus about space

- Improve student and teacher knowledge about what’s happening today regarding outer space development

- Convince members of your community to use instruments which you have designed (teacher’s manuals, syllabi, curriculum, books articles and websites) into the required curriculum for K-12 and university students

- Explore ways to express the importance of understanding space industry trends

- Foster outer space educational learning communities in arenas not yet associated with outer space

- Encourage teacher participation in curriculum development and improvement

- Keep ongoing communication with teachers as they decide to implement outer space themes into their curriculum

- Make presentations at local, national and international conferences, specifically those where teachers and civic leaders attend
• Facilitate and initiate discussions about ways that the context of curricula can be made to match emerging trends and anticipated societal changes

• Promote a greater awareness and sensitivity to information about outer space

• Persuade school districts to adopt a plan to incorporate a diverse and more sophisticated curriculum including outer space development phenomena

• Encourage teachers to take on the challenge of implementing curriculum change

• Develop teacher manuals

• Create proposals that dovetail current school mission statements in with outer space development themes

• Promote the vision of outer space activities as an opportunity for optimal interdisciplinary studies programs and centers for international education outlooks

• Promote the understanding that outer space can be used to engage and promote achievement and motivation in students

• Encourage schools to cause a rise in experts in areas where specialists will be in high demand in the future

• Promote a new role for schools as incubators for scholars, trouble-shooters and problem solvers

• Outline subject areas proposed for integration into the curriculum and create and make widely available model syllabi and curriculum outlines

• Organize training workshops for teachers

• Develop useful informative websites

• Publish books and articles for students and teachers

• Arrange agreements between space industry leaders and schools, and secure commitments to partner with schools in ways beneficial to students’ future career goals and aspirations

2.3 Space as a Stimulus for Carrying Out Interdisciplinary Studies Requirements

Many schools and universities today have articulated an interest in promoting interdisciplinary studies. Space studies is a natural for providing students with opportunities to focus on several disciplines and to set the value of interrelating several fields of study in order to understand things and to solve problems. Space studies can be used to promote academic excellence and
focused expertise development and achievement.

Outer space as a field is highly diverse. It can include technology, physics, geology, science, engineering, business, law, politics, hotel and restaurant management, space stations, space hotels, life support systems, psychology, sociology, medicine, international law, physiology, chemistry, intergovernmental organizations, institutions and industries, computer science, astronomy, and many more subject areas. Applying problem solving techniques usually involves several fields being integrated.

Usually space studies require that students be fluent in several disciplines and this is good practice for interdisciplinary studies. For example, a student may wonder: Why should I study chemistry? Chemistry is foreign to most students. However, understanding that by learning more about chemistry could mean developing an expertise in designing better space hotels which would improve the quality of life for people living in space, might serve to inspire a student to study chemistry. Space can link meaning to fields typically seen as exclusive to most people, and thereby inspire students to learn subjects that few historically have taken an interest in.

These strategies will serve to increase student, teacher, administrator and public official’s awareness about the current status and future emerging industries connected to outer space development and space law. This will serve students and youth so that they can understand and prepare themselves for relevant future industries at a young age through school curriculum.

**CONCLUSION**

After years of hard work, I developed a way to inspire and motivate people to design exciting lives. I would like to see more people shoot for engaging careers. I would like to share my successes and struggles with others – to help them achieve. I am particularly interested in engaging people who usually get left behind. Vision and inspiration are lacking in classrooms, and in the hearts and minds of youth. Too often, too many young people are discouraged from pursuing their dreams.

Most space specialists are visionary researchers who understand how to anticipate emerging trends. We have to teach others how to see and understand the implications of these patterned trends. We cannot in good conscience allow just an elite few to possess this knowledge. Therefore, only a handful of experts, scholars, students, lawyers, industry personal, entrepreneurs and policy professionals are aware of the plans for colonizing outer space. This is situation fails to benefit “all peoples irrespective of the degree of their economic or scientific development . . . “. All people, particularly all students need to be stimulated and engaged in meaningful life-changing ways with future industries. Therefore, more people must be made aware so that they can engage in this area, if they choose to.

My area of expertise is space law politics. I empower students by sharing my research pursuits with them and by holding them up to the window so that them too can see with a microscope and telescope the invisible things which occur within our international society. Furthermore, giving them this type of lens allows them to understand legal-political-historical patterns, so that they can establish legitimate sounding voices and position themselves to
be heard in ways to promote diversity of thought, policy and opportunity. People need this type of inspiration today. I plant seeds by making students (K-12 and university) aware of current legal-industry happenings regarding outer space. The field of outer space development has not yet been formally declared as a critical area for education, however it should be. Whether or not people realize it, we are at the dawn of what will soon become outer space development. Caring concerned lovers of democracy and equality have a unique moment in time to make a change to benefit all of humankind in perpetuity.

REFERENCES


Wilson, Craig L., The Open Access Curriculum (Boston: Allyn and Bacon, Inc., 1971)

ENDNOTES


4 National Aeronautics and Space Administration Authorization Act of 2005, Public Law 109-155 (109th Congress, 1st Session); former Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005 was approved by the House with bipartisan support. In delivering a speech on the House floor in support of this bill, Representative Calvert indicated that the bill "represents the first time that the President's Vision for Space Exploration has been fully endorsed by both Houses of Congress . . .". See "NASA Authorization Act Headed to the President's Desk", December 22, 2005 press release by Representative Calvert at spaceref.com/news.

5 The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty", adopted by the General Assembly in its resolution 2222 (XXI)), opened for signature on 27 January 1967, entered into force on 10 October 1967, 98 ratifications and 27 signatures (as of 1 January 2003).


7 Id.