

TO PLAN FOR A CENTURY

ISU'S VISION OF EDUCATION IN SPACE

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From the very beginning of its Founding Conference in 1987, the International Space University (ISU) has lived with the vision that one day it would be able to educate students in space. The founding vision saw three steps in the development of the University: first, a postgraduate summer program (which continues today as the Space Studies Program); second, an offering of space related Masters Programs with a permanent campus (which was inaugurated in 1995 and which operates out of facilities in Strasbourg, France); and an extraterrestrial facility, initially in Earth orbit (which remains a dream, yet appears more attainable as each year passes).

In a promotional film that he prepared for ISU in 1987, the University's first Chancellor, Sir Arthur C. Clarke, made no secret of the University's orbital aspirations. Early in the presentation he notes, *"Whoever attends ISU on Earth or in its orbital facilities in the future will require the highest aspirations of any students in the world."* Entitled, *To Plan for a Century*, the full video is visible in several places on the Internet including at this address at the Space.com site:
<http://www.space.com/common/media/video/player.php?videoRef=080319-Clarke>.

Sir Arthur's straightforward message was drawn from the Chinese parable that to plan for a day one plants a seed; to plan for a decade one plants a tree; while to plan for a Century, one educates the people.

In materials prepared to support ISU's 1987 Founding Conference, Peter Diamandis and Kenneth Sunshine wrote of their vision for the evolution of ISU declaring, "*In the Twenty-first Century when permanent manned presence in Earth orbit has been firmly established, it is hoped that the University will have permanent facilities in space.*"¹

We believe that what we accomplished between our founding and the end of the Twentieth Century advanced this vision. We also believe that the Twenty-first Century demands still more of us.

Of course dreaming of taking an educational mission into space is the easiest part of the enterprise. To fulfill the mandate given to many generations of ISU students that they must 'dream with rigor,' we need not only to solve the question of how we actualize the dream, but also why.

Of these two questions, the latter seems the most important to me.

One of the greatest benefits of education about space and space activity has been the expansion of perspective. Working against the vastness of the cosmos and at scales which dwarf anything we can experience from studying Earth alone, space studies have not only pushed forward our understanding of Earth's place in the universe, they have also enabled us to see and understand things close to home to which we had been too close to notice or too preoccupied to find. Certainly the insight into the greenhouse effect that we gained from robotic exploration of Venus and sharp analysis of the data thus gained is one tangible example. Another is our emerging understanding of Earth's fragility, gained from stunning images of our sapphire and aquamarine planet hovering in the blackness of its cosmic neighborhood.

Increasingly we also draw perspective from the slowly growing database of human presence in space, which yields insights into the capacity and limitations of the human body's ability to adapt to microgravity, increased radiation loads, and transition stresses. Up to this point, however, the largest volume of new knowledge exists only in databases but not in the experience of living human beings. With only a few hundred active astronauts who have had personal experience adapting to even a near-Earth space environment, we do not have a large pool of people to call upon, if as many authors in this volume suggest, there are emerging commercial opportunities to exploit in space.

Thus, the first answer to the question 'why' is that we need a cadre of very smart people with experience using their intellects, physical capacities, and problem solving abilities in space. This was the early vision

¹ Diamandis, Peter H. and Kenneth H. Sunshine, "Creating an International Space University," briefing paper prepared in support of International Space University Founding Conference (1986), unpublished, ISU Archives, pp. 3-4.

of Robert Heinlein's 1948 book, *Space Cadet*,² which quite presciently illustrates simple challenges of adjusting to life in space juxtaposed with the full rigors of a demanding, multi-disciplinary curriculum. Yet this Heinlein-created curriculum was destined for a very special group of guardians, a co-opted caste of peacekeepers for the solar system, but not for the general education of spacefarers.

If orbital manufacturing, asteroid mining, space tourism, lunar habitation and other such visions have any chance of commercial success they, too, will soon need a very specially prepared group of people to attend to the on-site tasks needed to achieve success. Beyond this classic vision of a need for an experienced, private space cadre, a combination of cosmic merchant marine and space-proven technical representatives, if you will, there is an even more pressing need. It emerges from the natural consequences of any or all of these early commercial visions for activity beyond earth being truly successful.

The implication of success is that human settlement will follow. It has always happened that way in the past, and there is no reason to believe that it will be otherwise this time. In the face of that expected reality we need a lot more than just ship drivers and equipment experts. We will need space-proven expertise in every field essential to the infrastructure of a human community. Hence, we will need education in space because after years of sending the occasional human to orbit, we are on the threshold of sending human society to space. Groups of humans can go anywhere without educational institutions, but human society exists only where there is also education.

At ISU we see this as rooted in our mission. After a few direct statements about the impact we seek to have on Earth, our mission statement concludes by linking those objectives to our calling to help humankind advance beyond its home planet:

"...[ISU Programs] encourage the innovative development of space for peaceful purposes: to improve life on Earth and advance humanity into space." The full mission statement, along with the founding credo expressing similar sentiments, can be viewed at <http://www.isunet.edu/>.

Thus the first answer to why there should be educational facilities in space is derived from the great likelihood that a significant piece of humanity's future will unfold there. The farther out our species goes from its planet of incubation, the greater will be the need for education not only to prepare the voyage, but to interpret it and adjust to it.

There is a second reason as well.

For the next several hundred years at least, most humans will live on Earth. As they continue to advance in their ability to identify, solve, and,

² Heinlein, Robert, *Space Cadet*, New York, Orb Books, 2006, 224 pp., ©1948.

yes, even create problems, their future will be greatly aided by the perspective of research and insight acquired off planet. We know from several generations of astronauts that even in low Earth orbit, our home planet looks different, and that the orbital environment in which our spacefarers live teaches us through challenges not present on its surface. Whether through the overview effect or through the opportunity to perform experiments in microgravity or hard vacuum, space opens the possibility of new perspectives and points of view. By bringing people of different nationalities, disciplines, and cultures into densely packed communities of spacefarers, spaceborne facilities open the way to better understand teamwork, synergy, and community itself. More than most earthly conditions, it may duplicate the intense interdependence that seems to have played such a critical role in the evolution of our species.

Beyond our atmosphere, the slightly more than 500 people who have had the privilege to fly in space have been able to see things differently, solve medical mysteries, explore alternative materials, and inquire into scientific principles and applications under a very different set of limits than those present on Earth. The result has occasionally been scientific breakthroughs, but even as importantly it has led to the reformulation of questions and rethinking of paradigms. This is the kind of result sought by every teacher who has ever worked to lead bright students into the world of critical thought. It is a result I expect to see achieved through education in orbit before the 21st Century is finished.

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Dr. Michael K. Simpson



Dr. Michael K. Simpson became President of the International Space University in May 2004. His academic career extends over 32 years and four continents. He has also been president of Utica College and the American University of Paris with a combined total of twenty years of experience as an academic chief executive officer. He has lectured in political science, international relations, business management, international law, leadership, and economics at Universities in the United States of America, France, China, the United Kingdom, and Australia.

Dr. Simpson received his Bachelors Degree Magna Cum Laude from Fordham University in 1970 where he was elected to Phi Beta Kappa. He has also been elected to academic honor societies in the fields of political science and business management. After graduating from Fordham University, Dr. Simpson accepted a commission as an officer in the U.S. Navy where he served as an Oceanographic Watch Officer, Communications Officer, Leadership and Management Instructor, Repair Officer, and Political Military Action Officer. In 1993 he retired from the Naval Reserve with the rank of Commander. He holds numerous commendations including the Defense Meritorious Service Medal.

Dr. Simpson completed his Ph.D. at The Fletcher School of Law and Diplomacy of Tufts University, holds the Master of Business Administration from Syracuse University; and two Master of Arts degrees from The Fletcher School. He has also completed two prestigious one year courses in Europe: the French advanced defense institute (Institut des Hautes Études de Défense Nationale) and the General Course of the London School of Economics.

He is a board member of the Space Week International Association, a member of the Board of Governors of the National Space Society in the United States and an observer representative to the UN Committee on the Peaceful Uses of Outer Space. In 2005 he served as a participant in the workshop on *Humanity and Space the Next Thousand Years* hosted by the Foundation for the Future and from 2006-2008, he served as a panel member of the Association of Space Explorers workshop on mitigation policy for threats from near earth objects and currently serves on the commercial Spaceflight Safety Committee of the IAF. He is a co-founder of the International Institute for Space Commerce and a founding trustee of Singularity University. He is a corresponding fellow of the International Academy of Astronautics.

Seeing universities as nodes in an interconnected lattice of educational opportunities, Dr. Simpson has been responsible for concluding partnership agreements with Universities in Australia, Asia, North America, the Middle East, and Europe and has brought ISU into the Space Education Consortium in the United States as the only international partner in that body.

During his tenure as President of the International Space University, the school's already widely respected curriculum has been enhanced to include

more material on satellite operations, management challenges of space projects, personal spaceflight, entrepreneurship, space policy, and prospects for commercial activity in space. An ISU Executive MBA enrolled its first students in June 2009.

The International Space University is headquartered in Illkirch-Graffenstaden in the urban community of Strasbourg, France. It offers three Masters Degrees, including the recently inaugurated Executive MBA. Each year from June through August it offers a prestigious, 9-week long session known as the Space Studies Program (SSP) that prepares high potential participants for rapid advancement in the space sector. The school also offers a number of short professional development courses tailored to the needs of space agencies and businesses.

He is also the author of Chapter 5 of this volume, *Spin-Out and Spin-In in the Newest Space Age*.

