Space, the final frontier? Or the finished frontier?

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I am truly honored to be here, and I thank Ahrvid Engholm for inviting me.

But if you are Swedish or know some Swedish words, you may be in for a big disappointment. I can assure you, inspite of my name, Dator, that I am not a computer.

Or, if I am, I am so cleverly made that no Turing Test will ever reveal that fact to you. Moreover, I quite eagerly disobey all three of Azimov's Laws of Robotics.

No, I am afraid that I am merely a Professor of Political Science at University of Hawaii, and Director of the Hawaii Research Center for Futures Studies there. I also was Secretary General and then President of the World Futures Studies Federation for ten years during the 1980s and early 90s.

But I am here in Sweden as a faculty member of the Summer Session of the International Space University (which I will call "ISU" from now on), which is being held on the campus of the Royal Institute of Technology--KTH--just north of here. I am the co-chair of one of the academic departments of ISU which is called by the curious name, "Space Humanities." My department is responsible for covering all of the non-technical, human-oriented aspects of space research and space flight.

There are 10 Departments in ISU

- Space Systems Architecture and Mission Design
- Space Business and Management
- Space Engineering
- Space Life Sciences
- Space Policy and Law
- Space Resources, Robotics and Manufacturing
- Satellite Applications
- Space Physical Sciences
- Space Informatics, and, finally
- Space Humanities

So, Space Humanities is responsible for teaching and researching everything from the history of human ideas about the cosmos and humanity's place within the universe; to that branch of science fiction which focuses on space--space fiction, you might say--and in all of its forms--print, video, film, painting, sculpture, and music. We are also responsible for the history of modern space flight everywhere in the world; the use--or, actually, almost total non-use--of social science research and applications in the space programs of all nations so far, and especially of issues involving cross-cultural conflict and

cooperation in multicultural space flights or space settlements. And we are responsible for raising ethical and spiritual questions about the appropriateness of past, current or proposed space programs.

That is a very tall order, as you can see.

But ISU was built, and has continued to live, by fulfilling grand dreams.

ISU was conceived in the early 1980s by three young graduate students at the Massachusetts Institute of Technology (MIT) in the US. While happy that space exploration was once again being encouraged by various governments in the 1980s, they were very much concerned about the nationalistic and militaristic focus of those programs. They dreamed of--and then were able to create--something which did not exist anywhere in the world: a place where students, teachers, and researchers from all countries, cultures, and academic disciplines, could come together to study the history and plan for the future of space exploration and settlement on a truly interdisciplinary and inter-cultural basis. They dreamed of an International Space University. And they created it.

The ISU began as a series of ten week summer sessions which have been held at various spots around the world--initially, in 1988, in Cambridge, Massachusetts; and then subsequently each summer in Strasbourg, France (1989), Toronto, Canada (1990), Toulouse, France (1991), Kita-Kyushu, Japan (1992), Huntsville, Alabama (1993), Barcelona, Catalunya, Spain (1994), and now Stockholm, Sweden. Next year's summer session will be in Vienna, Austria, and we expect subsequent summer sessions to be held in China, India, and perhaps Hawaii, and then eventually on the Moon, Mars, and beyond.

However, ISU now has a permanent campus, in Strasbourg, France, and next month, in September 1995, it will admit the first 45 students who wish to pursue an eleven month program of studies and projects which will lead to their receiving a Master of Space Science--an MSS--degree.

There is also a network of more than 30 universities and research institutes around the world which are formally affiliated with ISU, serving, among other things, as academic sites for MSS students for a few months during their year of study.

One of the most interesting things about the MSS is that it was conceived from the very beginning not only as an international--indeed, transnational--academic enterprise, but, even more challengingly, as a transdisciplinary enterprise. While the ten departments I mentioned above will continue to exist, all of the basic core lectures and most of the subsequent academic blocks, will be taught from an interdisciplinary perspective. Since I have been actively involved in planning the MSS program, I can assure you that creating this transdisciplinary curriculum is quite a challenge, and, I might add, quite unique among the world's new, as well as old, academic entities.

After an initial shaky start, ISU seems to be on good financial, and excellent administrative and academic, footing. ISU summer session alumni already are found in the space agencies, space industries, and space-oriented academic centers of almost every country and locality in the world. The intention is to build a truly global, transdisciplinary, and growing cadre of young space

scientists, engineers, researchers, academics and activists to help lead humanity towards the stars.

So, if I were just to look at the future of space studies and space exploration from the point of view of ISU, I would say the future looks very bright indeed.

But I am sure you know that most people in the world--or at least in our part of the world (Europe, including Russia, and North America)--seem almost to have given up on space--especially on human space flight and human space settlement.

NASA--if it survives in any thing like its previous form--does not plan to return humans to the moon, much less place humans on Mars or elsewhere else in the solar system, for the foreseeable future. NASA seems quite content with little more than shuttles to nowhere and satellites to Earth. Indeed, NASA should probably change its name to the National Satellite Applications Agency, and just take the word "space" out of it entirely.

To me, "space" begins with the moon, and extends outward. Actually, I would prefer to say that "space" begins where Earth's gravity ends. In my view, satellites have always had much more to do with Earth than with space. So I am very sorry that most space agencies and industries everywhere now are almost wholly consumed with launching and maintaining satellites--and with cleaning up the horrible resultant debris, which is quite another discouraging story: the amount of old satellites, exploded rocket parts, and other space junk circling in low earth orbit is appalling indeed, and will seriously impact even the future of satellites.

In fact the future of any kind of space flight or exploration at all looks exceedingly grim, and most people are shocked to learn that anything like an International Space University could possibly be thriving in such a negative environment as the present.

Indeed, my talk, very kindly titled "Space, the final frontier" by Ahrvid Engholm, might at least have a question mark after it, and perhaps might better be called "Space, the finished frontier."

It is very difficult to imagine a convincing scenario that will have the US, Russia, Europe, or any other nation setting up a good-sized moon colony, much less Mars settlement, any time soon, I would imagine many of you might feel.

And many people would probably say that space exploration, much less settlement, is just a gigantic waste of money, which we don't have, anyway. There are so many current, and growing, problems on Earth that we should spend whatever money we have solving the very real challenges of Earth, and not wasting our time and efforts on "bolding going where no one has ever gone before."

Let's leave space entirely to the science fiction writers and readers, and forget about it as a national policy, many people seem to be saying.

I did not hear any cheers for that. So I ask you: Would it be good, or bad, for your business, as space fiction writers, if you were to know that humans were going to give up entirely--at least for the foreseeable future--on any kind of a

space program? Would that make people yearn for more space fiction, or give up on it entirely as well? What do you think?

It may surprise you to learn that many--probably most--of the students at ISU have very grave questions about the ethics of their preferred profession. Most of the students are deeply concerned that any money spent on space is wasted, when they think about the looming earthly problems of population growth, poverty, and especially environmental change.

If space activities are to exist, most of them believe, they must be carried out "in the service of humanity." ISU students are very reluctant indeed to be seen as wasting humanity's diminishing resources on their own selfish, expensive, and grandiose schemes when there are so many more pressing problems all around them on Earth.

What's more, they see the heroic feats of the past--the Moon landing, Space Lab, Soyuz, Mir and all the rest--to be something out of the distant past. Something which charmed the old, romantic, visionary generations of their parents and grandparents, but which has no place whatsoever in their present or future lives.

The ISU community--students, teachers and staff--went to see a special showing of the movie "Apollo 13" recently, and most of the students were quite bored by the whole thing, while the oldsters were weeping in their seats, deeply regretting the passing of the good old days when men were men, bravely loosening the bonds of Earth against all odds--and ground control was diligent, extremely clever, and chain-smoking cigarettes.

Wouldn't it be interesting if, 50 years from now, 100 years from now--500 years from now--humanity (or what is left of it, after the warming) were still looking back in wonder, awe, or maybe disgust, at the Space Race and the moon landing, and seeing it all as a strange, aberrant, unique, quaint episode in human history, never again repeated or even seriously contemplated?

Imagine what the future will be like--what humans will be like--if we do in fact "just say no" to further manned space flight or to the establishment of extra-terrestrial settlements.

I think a very good case indeed can be made for the contention that the period from 1914 to 1989 was the most unusual in all of human history--two World Wars, a global depression, and a Cold War most positively seen in the space race between the US and the USSR, and most depressingly seen in a gigantic and thoroughly wasteful arms race--a War which neither side won, and, though the USSR lost first, which also clearly and permanently crippled, if not actually destroyed, the United States as well.

It is very likely that all of the high science and high tech offspring of the World Wars and the Cold War were extremely premature, and are now at an end. Unlike the 20th century--the most abnormal in history--the 21st Century will be more "normal", with substantially less--perhaps no--new scientific breakthroughs or technological advances. Because who is going to fund them, and for what purpose?

Big science and technology everywhere has been almost totally dependent on military funding for the past 50, if not 100, years. But now, governments everywhere are totally and perhaps permanently bankrupt, and it is utopian indeed to believe that private industry has either the money or the will to take over from governments the funding of basic scientific and technological research and development, especially of any super projects.

No, the abnormal century is over, and the 21st century will return to more normal miseries and pleasures, albeit on a global scale never before experienced, which means there will be plenty that is unique about the 21st century indeed.

For optimism and renewed scientific and technological vigor, I suggest you focus on the 22nd century and beyond.

But wait.

There is more to the world than national governments.

There is a growing international, indeed, global, community, of which the ISU alumni are merely one obvious component. What nations cannot do, global actors might very well do.

And what governments may not do, religious, spiritual, or other non-governmental groups might do.

Which groups DO have lots of money and enormous dedication and enthusiasm? Well, how about the Mormons? Or some of the Japanese religious groups (I am thinking specifically of Tenrikyo, which has demonstrated tremendous interest in space exploration and settlement). And if there are Moonies on the Earth, then why not Moonies on the Moon, and beyond.

Also, while the era of continuously new technological breakthroughs might be over, or at least drastically slowed, there is still plenty of novelty to be wrung out of the existing or emerging technologies. Genetic engineering and nanotechnology are certain to offer dramatic technological capabilities for microminiaturization, energy, new materials and manufacturing, and even sources of what we now call "money", for space and Earth activities which are entirely different from those of the past and present.

I certainly am completely convinced that we are now in the latter stages of a total, global transformation, and that, by the early 21st century, we, or our descendants, will be living in a world quite different from the world the Apollo giants created and still try to inhabit.

Or else, we won't.

By which I mean, humanity is clearly, I believe, at a point where its own survival is completely uncertain. Because our ability to envision what we believe to be a better future, and to create powerful technologies to reach it--and yet because we are completely unable to develop the ethics, or create institutions to exercise, responsibility for the consequences of our technologically-induced social and environmental change--we humans stand poised either for extinction, or transformation.

The famous Russian futurist, Igor Bestuzhev-Lada, expressed it correctly and succinctly when he said that the choice before us is either New Civilization or No Civilization.

So which is it to be?

The choice is very much in your hands. You science fiction writers are among the most potent molders of minds about the future. You have far more influence over the future than do I, a professional futurist and teacher. I can assure you that, after 30 years in this business, while I have been depressingly accurate as a fortune teller, I have been utterly impotent as a motivator and changer, though it has been by intent NOT to predict the future, but rather to help people envision and to create it.

I am clearly helpless. But not you. You are very powerful and influential. Everywhere I go, people tell me how much their ideas about the future derive from the science fiction they read or see.

So, what are your intentions?

Do you intend to scare us to death, or to empower us towards transformation. Or are you only in it for the money, like everyone else?

No! Instead, I will leave you with the challenge found in the final sentence in the ISU Credo, which is, "Together, we shall aspire to the Stars with wisdom, vision and effort."

Ad Astra!

ISU CREDO

At an ISU Event organized by ISU on Friday night, 28 April 1995, the three ISU Founders Todd Hawley, Bob Richards and Peter Diamandis read to the community for the first time the newly written ISU CREDO. The Founders presented to ISU President Roland Dore a framed signed original of the Credo to be put in the Central Campus. The following Credo represents the spirit and purpose for which ISU was created.

ISU CREDO
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12 April 1995

WE, THE FOUNDERS of the International Space University, do hereby set forth this Credo as the basis for fulfilling ISU's goals and full potential.

INTERNATIONAL SPACE UNIVERSITY is an institution founded on the vision of a peaceful, prosperous and boundless future through the study, exploration and development of Space for the benefit of all humanity.

ISU is an institution dedicated to international cooperation, collaboration and open, scholarly pursuits related to outer space exploration and development. It is a place where students and faculty from all backgrounds are welcomed; where diversity of culture, philosophy, lifestyle, training and opinion are honored and nurtured.

ISU is an institution which recognizes the importance of interdisciplinary studies for the successful exploration and development of space. ISU strives to promote an understanding and appreciation of the Cosmos through the constant evolution of new programs and curricula in relevant areas of study. To this end, ISU will be augmented by an expanding base of campus facilities, networks and affiliations both on and off the Earth.

ISU is an institution dedicated to the development of the human species, the preservation of its home planet, the increase of knowledge, the rational utilization of the vast resources of the Cosmos, and the sanctity of Life in all terrestrial and extraterrestrial manifestations. ISU is a place where students and scholars seek to understand the mysteries of the Cosmos and apply their knowledge to the betterment of the human condition. It is the objective of ISU to be an integral part of Humanity's movement into the Cosmos, and to carry forth all the principles and philosophies embodied in this Credo.

THIS, THEN, IS THE CREDO OF ISU. For all who join ISU, we welcome you to a new and growing family. It is hoped that each of you, as leaders of industry, academia and government will work together to fulfill the goals set forth herein. Together, we shall aspire to the Stars with wisdom, vision and effort.

- Peter H. Diamandis, ISU Founder
- Todd B. Hawley, ISU Founder
- Robert D. Richards, ISU Founder