



Yuri's Challenge

Cynda Collins Arsenault: Address at the International Forum on the Peaceful Use of Outer Space, Paris, April 21, 2011

"Circling the Earth in my orbital spaceship I marveled at the beauty of our planet. People of the world, let us safeguard and enhance this beauty –not destroy it!"

That is quite the challenge that Yuri gave us 50 years ago. As the first human to see the Earth from space, he recognized both the beauty and fragility of our home. One of the many outcomes of that historic journey is that today, you do not need to be a cosmonaut to enjoy that view. Did you know that you can sign up to receive "Tweets" from space on your cell phone? This is a tweet from Paolo Nespoli ESA's Italian astronaut as he flew over Paris. You can see the UNESCO building here.

The first photos from space helped us to see that the world is a global community and sparked the environmental movement to protect this fragile planet. Now thanks to the Hubble space telescope we have a window deep into the universe beyond our planet providing us with an even greater understanding of our place in the cosmos.

Did Yuri understand the magnitude of that first venture into outer space? He would have had a lot on his mind – including whether or not he would he make it back alive. Could he have guessed that in just 50 years there would be over 1000 satellites circling the Earth dramatically improving the lives of billions of people around the world? Satellites have not only enhanced the knowledge of our planet and allowed us to use its resources more efficiently but have also changed the way knowledge itself can be distributed. Satellites have allowed developing countries to provide education, information, health and communications to large populations and remote areas without the need to build costly infrastructure. By linking cultures and communities, improving the flow of information, goods, and services, satellites have contributed to environmental and human security. The indirect and potential future cultural, economic and social benefits to the world derived from that first flight are incalculable. Could Yuri have imagined that when a terrible earthquake and tsunami devastated Japan that one of the government's first official acts would be to invoke the International Charter: Space and Major Disasters, which helped ensure that authorities and responders could get instant satellite images of the impacted areas? Could he have dreamed that GPS signals sent from smart phones would enable dramatic rescues of people trapped in buildings and isolated areas? And that real-time images of the devastation would be watched by people around the world by people who wept . . . and then rallied to help.

As Yuri marveled at the beauty of space, could he envision that in just a few decades there would be men AND WOMEN from many nations including Russia and the United States living and working together on the International Space Station? Probably not --that may have been beyond his imagination at that time. He also probably could not guess at all the mess that we would make out there. Today there are over 500,000 pieces of human-created debris larger than a marble whizzing around the Earth. Of those, we can only track and monitor a small-



fraction – those larger than ten cm - about 21,000 pieces of debris plus the 1000 satellites. Most of the sixty nations, companies and international entities that operate satellites only know where their satellite is, NOT where everything else is.

We have already had a collision of satellites -- and we have had some intentional destruction of satellites, which of course created more debris. This debris can stay in orbit for decades or even centuries, posing a long term threat to other satellites. Just this month, the International Space Station had to perform a costly maneuver to avoid a piece of debris from the 2009 Iridium-Cosmos collision. And a few days later, a piece of space debris from an anti-satellite test came uncomfortably close to the ISS, forcing the crew to take shelter in a Russian lifeboat. Scientists from NASA and other space agencies estimate that a destructive collision between an active satellite and a debris piece larger than a marble (which can cause incredible damage) will occur every two or three years, jeopardizing all assets in space.

Now is the time to examine what must be done to keep space sustainable so that humanity can continue to use outer space for peaceful purposes and socioeconomic benefit. A recent report by the U.S. Space Foundation reported that the global space economy rose to \$276 Billion. That is exciting news offering potential for economic development around the world. Yet the risks to the space environment are also rising. Crowding of spacecraft and debris in critical regions increases the risk of collisions and electromagnetic interference can disrupt critical services. As more nations rely on satellites to protect their borders and citizens, protection of the space environment becomes ever more important. How do we keep conflict on Earth from spreading to the space domain, and how do we keep events in space from sparking conflict between nations on Earth?

What do we need to be doing today to safeguard not only the Earth, as Yuri challenged, but outer space itself? For the last 6 years, Secure World Foundation has worked with governments, industry, international organizations, intergovernmental bodies and civil society to raise awareness of these problems and help devise means to overcome them in order to create the secure and sustainable use of outer space for the benefit of all humanity. As a permanent Observer to the UN Committee on the Peaceful Use of Outer Space, we are excited to work with the Long-Term Sustainability of Outer Space Activities Working Group to develop a set of best practices for sustainable space operations.

We see this long-term sustainability of space activities as having two main components. The first is the physical environment, which includes management of space debris, electromagnetic and physical crowding and congestion, and space weather. These are common threats that all space actors must deal with. The second component is the political environment, and includes promoting stability and preventing conflict between nations.

Tackling the issues of space sustainability requires looking closely at the existing space governance mechanisms and determining if they are up to the challenge. Do they provide the



necessary norms or rules of behavior, regulations and standards, and forums for dialog and negotiation to enable us to use the global commons of space in a sustainable manner? Do we need to create new legal, technological, political or economic mechanisms? And above all, how can we work more cooperatively between nations, private companies and non-governmental entities to achieve our collective goals?

Secure World Foundation is not alone in this effort. Space sustainability is an increasingly recognized challenge and imperative, as indicated by the 2010 United States National Space Policy, the work of the European Union on a proposed Code of Conduct, the continuing work of the United Nations' Committee on the Peaceful Uses of Outer Space, the Conference on Disarmament and the World Economic Forum's newly created Global Agenda Council on Space Security, part of its campaign to identify, assess, and mitigate global risks.

One of the most promising mechanisms we have identified to improve space sustainability and security is Space Situational Awareness – knowledge about what is happening in the space environment and what effect it could have on our use of space. SSA (as it is known) is the foundation of space security and sustainability. It enables all space actors to operate safely and efficiently in space. It provides an awareness of space environmental threats and allows for their potential mitigation. SSA is also an essential part of political stability in space, as it can be used to monitor and reinforce norms of behavior and as part of verification of agreements and treaties.

SSA is inherently an international and cooperative venture because it requires a network of globally distributed sensors and data sharing between governments and satellite owner operators. Many of these elements are already in place and what we need now are the mechanisms and agreements for safely sharing the data to improve the overall quality and availability to everyone operating in space. Earlier this month, Frank Rose, a US Deputy Assistant Secretary of State, spoke at the Space Security 2011 workshop in Geneva, organized by UNIDIR and the Secure World Foundation saying, *Everyone's picture of the space environment is greatly enhanced through international cooperation and shared SSA. Furthermore, strengthening security and stability in space is in everyone's interests.*

Not only do we need to protect the space environment, but we must also protect Earth from the space environment (or at least from what comes in from space such as asteroids). We know that in the past the Earth has been periodically struck by asteroids and comets, drastically altering the environment and devastating life across the planet. We now have the technological tools for planetary defense - to detect and warn about such threats, and potentially even prevent them. However, saving the human species from destruction is not something any one nation can do alone. It takes international cooperation and collaboration to tackle such a monumental problem as safely moving an asteroid. Secure World Foundation is proud to be working with the Association of Space Explorers, national space agencies and other entities in developing an international response to potential asteroid impact. For those who



are not familiar with the Association of Space Explorers, it is an exclusive club consisting only of those people who have completed at least one orbit in space. (We are honored to have some of their members here with us today). Like Yuri, they recognize the fragility of the Earth and the need to act as a unified body to meet some of the global challenges we face today.

There are many challenges to overcome and work is already underway. We invite you to join us in the task. The peaceful use of space provides us with a world of possibilities, indeed, even a universe of possibilities, but it will take careful consideration, thoughtful planning and above all, cooperative engagement to ensure that our children and our children's children will be able to reap the benefits that space promises.

How will we do this? As Vincent Van Gogh said, "*For my part I know nothing with any certainty, but the sight of the stars makes me dream.*" I hope that we can all dream together.