



SPACE RENAISSANCE

Dawn of a new age of civilization

A paper given by Walter C. Putnam to the Kiwanis Club International the August 23rd 2011

A little more than 40 years ago – 42 years in July, to be exact – men walked on the moon for the first time. This achievement was a landmark for humanity – not only in that it demonstrated a vast technological ability but also because it was that “giant leap for mankind” – as Neil Armstrong so eloquently put it – in an eternal quest for the stars.

Most of us grew up watching the space program – the first orbiting satellites, the Apollo program, the Space Shuttle and International Space Station. We became accustomed to constant “leaps for mankind” in technological achievement. We shared in the sorrows – the Challenger explosion, the loss of Columbia high over Texas – and we shared in the numerous heroic successes of our astronauts and the scientists and engineers who formed NASA.

With the ending of the Shuttle program, many Americans are now beginning to feel that all those glory days are behind us. I’ve heard people lament the changes in direction of our policy of space exploration as though the adventure of discovery beyond the pull of Earth’s gravity is all but over.

I’m here to remind you that we are not at the END of the Space Age. We are still merely at the beginning. Current circumstances – mainly economic ones – might make it seem that we are unable to advance – or that major advancements might not come in our lifetime. But there are still a LOT of things going on that make me believe we are rapidly entering a new age of civilization that ultimately will take us beyond Earth and to the stars. All things considered, this new age is likely to be the kind of pivotal movement in history that occurred as Western civilization emerged from a state of decline through what became known as the Renaissance – literally the REBIRTH of civilization.

This new age we can call the Space Renaissance, because it comes at a time when humanity faces dire predicaments on Earth while possessing the technology to approach solutions through advancing into extraterrestrial space. And it will bring about vast changes in the way we think about ourselves – our science, our politics, our economics, even the social contracts that bind us together as human beings. It will alter, in fact, the way we regard mankind’s position in the universe, in much the same way as the notion of Renaissance astronomer Copernicus more than 500 years ago that the Earth revolves around the Sun.

The Space Renaissance will both create such changes and be forged by them. As ideas advance into new technology and new endeavours, those developments will spawn new ideas. This is the way humans have always advanced – and are advancing even today.



There is no question – in my mind – that we are progressing rapidly toward a time that human beings will routinely travel through extraterrestrial space – tapping resources such as energy, minerals and even water – not as an Earth civilization but as a Solar Civilization. Not everyone might agree with that assessment. Some are simply too pessimistic to believe that mankind will be able to work together long enough to make it happen before destroying our planet. Others think it is too futuristic to contemplate – especially during a time when we are faced with widespread joblessness, rising debt and mortgage foreclosures at home, along with wars and revolutions in the Middle East.

I have to remind my friends that although many of the ideas of space exploration and development seem spun from science fiction, in many respects they are not of the future but of the present. Consider this:

- More than 200 people have already traveled in space.
- The International Space Station continues to operate, conducting experiments and research that have widespread implications not just for future space missions but also for developments here on Earth.
- Daily, we send and receive communications transmissions that are bounced off of manmade satellites.
- We have robots exploring other parts of our Solar System, including the surface of Mars, and devices such as the Hubble Space Telescope transmit images that provide ever increasing insights into the expanse of the Universe.

In short, we are already THERE – in space. And this is happening just 50 years after the first space missions that sent men into orbit. In many ways, it is akin to the explorations of the New World that occurred in the decades after Columbus first sailed across the Atlantic during the age of the first Renaissance centuries ago.

Now, in the decades ahead many more changes are sure to follow. I see it as a natural progression of human civilization, just as the exploration and development of the New World led to new nations built on new ideas of human freedom and democracy that were unprecedented in human history.

And just as developments then called for new ideas – new ways of looking at mankind and our relationship to the planet – there will be new ways of considering our relationship with other human beings today. There will be a need for unprecedented international cooperation as we advance not just on the basis of national interests but of the interests of all humanity coexisting on one planet. The old economic models that competed during the last century as Capitalism and Communism will give way to new models that rely on extensive cooperation between governments and private enterprise. In many ways, this is already happening. Consider the recent trends in the U.S. Space Program, in which greater reliance is placed on other governments and private companies to propel our astronauts to new discoveries.

And it in this latest development there are many opportunities opening up already to pave the way for the future of commercial space. I think this will accelerate as systems that



have failed in their missions to achieve human success are replaced by new efforts based on the long-term goal of protecting planet Earth while reaching beyond the confines of its gravitational pull toward other worlds.

Already, there are companies involved in efforts to promote space tourism, in which those who can afford it pay huge sums to travel above our atmosphere. There are even those with dreams of building orbiting hotels from which those lucky few could observe the brilliance of our blue planet presumably while sitting poolside under a domed cover shielding its own Earth-like atmosphere and artificial gravity.

Others are looking ahead toward space colonization efforts, in which similar habitats could be constructed on the Moon, or Mars, or even on orbiting space stations. Some would even utilize the tons of space junk now stranded in Earth's orbit, constantly revolving around the planet, to build such structures.

Some scientists and engineers have aims to mine the surface of the Moon, or Mars, or perhaps asteroids, to supply resources that are growing scarcer on Earth, or which are more difficult to obtain without further damaging our planet's environment.

One of the most intriguing proposals – to my way of thinking – involves space-based solar stations to garner the Sun's energy and relay it to Earth by microwaves or some other mode of transmission. I'm not a scientist, but I know some who are confident not only that this can be done in the not-too-distant future but that it will go a long way toward providing the bulk of our energy needs.

One of the groups I'm involved with, the National Space Society, sponsors an annual International Space Development Conference. I first went to the one in Chicago in May 2010 and was ASTOUNDED at the things I learned. One scientist gave a talk on constructing a solar power station on the Moon, using silicon from its surface to create the solar cells that would trap the Sun's energy. He noted that it would be a lot less costly to use materials from the Moon rather than to try to transport it through Earth's gravity.

An incredible amount of thought and study have gone into such concepts. We were amazed to see exhibits of proposed space habitats for humans living on the Moon and Mars. They are planned down to the most intricate details, such as growing food and relieving boredom from long periods of inactivity. One of the most popular exhibits by my group, Kepler Space Institute – which is a global, online academy and think tank dedicated to research oriented toward space development – was a scale model of a Japanese astronaut raking a Zen garden on the Moon. I can't tell you how many people came by to take photographs of that model – which through the lens of a camera really looked like the real thing.

Some of the most avid participants at that Chicago conference – and the ISDC held this year in Huntsville, Alabama – actually are students from abroad. There is an amazing interest in space activity among young people in other countries – especially India and China, but in other countries as well. There was a group of students from India at the



Huntsville conference in May who had won an international award for designing a space habitat.

Recently, I have become involved with another organization which is worldwide but based in Italy. Appropriately, it is called Space Renaissance International. Founded just shy of three years ago by an Italian computer software engineer, it has over 1,700 followers on Facebook from all over the world. In late June and early July, S-R-I held its first international Congress – which was a conference that took place entirely online and included dozens of scientists, engineers and other space enthusiasts from around the globe.

One of the decisions made during the conference was to begin a project to create a virtual orbiting space station which can be used as a model for people to get a good idea of what it would be like to live in space. Only it would not just be a computer game. It also would be a model for an actual space station environment to be created sometime in the future. SRI also is actively involved in trying to create a worldwide holiday – or at least a celebration – each July to commemorate the first landing on the Moon.

Rest assured that this expanding interest in space is not just taking place in other countries. There is still a great deal of activity in the United States, as well. And I think the U.S. remains on the cutting edge of space technology. During a tour last fall of the Kennedy Space Center, I was astonished to learn that the entire rim of Cape Canaveral is dotted with launch pads. Most of us are familiar with the structures used to launch the Space Shuttles. But there are many more still there, available for use as the burgeoning Space Commerce industry grows toward maturity.

And that is not the only location within the United States. A company called Space X – which is short for Space Exploration Technologies – is preparing to launch a Falcon rocket at Vandenberg Air Force Base in California that will provide the lowest payload-to-orbit cost ever – one tenth that of the Space Shuttle. Companies like Space X and United Launch Alliance – a joint venture of Boeing and Lockheed – are to me the wave of the future in space exploration and development.

So, the message I would like to leave with you today is that we are still heading out there, toward the stars. The same ambitions that drove Europeans to discover and explore new worlds, and inspired inventors like the Wright brothers to keep pressing forward until man could take flight, and pushed the United States into the space race that landed men on the moon are still with us, driving us ever onward and outward.

We are now, and will continue to be propelled by a new energy and new ideas into a new age for civilization. Another Renaissance – SPACE RENAISSANCE.

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