



The Space Renaissance International 1st Congress
2011 June 25th, 26th, July 9th, 10th
Rev. 2, June 19th 2011

Issue II – Three Projects for the Space Renaissance

“Assuring survival, employment and a future for all of our children by bootstrapping the Solar Civilization.”

- 1) Civilization Risk Assessment & Management Project - Abstract
- 2) Detect the most promising space industrial development line - Abstract
- 3) Feasibility study and design of a virtual O’Neill habitat, to be settled at an earth-Moon Lagrange Libration Point – Abstract

1. General setup

The projects will represent the main commitment for the SRI during the next four years, up to 2015. The key points of our road-map are the following ones:

- a) a dedicated SRI task force will be created just after the congress
- b) to draw the Statements Of Work and basic WBS of the projects
- c) to seek grants from foundations; to do that we will have to draw a proper plan, identifying the foundations, to take contacts; we shall be prepared to better develop the ideas, provide business plans, fill questionnaires
- d) to involve universities and research centers, from the very beginning; the SRI can gain visibility and achieve precious relationships in the academic world; the most suitable university faculties will be identified for each project, and a plan of contacts will be developed as well
- e) to seek sponsors and donors, creating funds is a of big relevance, or the projects will never step ahead
- f) to contact celebrities, proposing them to be testimonials and to give funds for the development of the projects
- g) to hold conferences everywhere, to spread the word of the Space Renaissance, to invite people to support and collaborate; the SRI President is available to go; other speakers will be identified as well.

On the background, we shall always have in mind our strategical goal: to create the basis for the Medici Space Renaissance Foundation, and the seed capital for the Space Investment Funds.



2. Projects

2.1. Civilization Risk Assessment & Management Project – Abstract (proposed by Adriano V. Autino)

Several philosophers, different for school and ideological orientation, wrote that the Civilization is running global fatal risks, during the 21st Century. The most famous two are Stephen Hawking and James Lovelock, but other ones, e.g. Paul Ziolo, made similar forecasts. Our unsustainable presence on this planet is now at 150% and heading to 200% by 2030 (World Wildlife Fund 2010 report). The development of the new industrial countries will accelerate such a process.

Our astronautic humanist analysis lead us to the basic concept that, keeping on growing up in a closed environment, the civilization will reach a breakpoint, after which it will rapidly start to decline in number, in culture and technology. That point can be defined as implosion or crash of the civilization.

But such forecasts, though very logical, are so far just intuitive.

When will such an event occur? How much is it probable?

And which risks are however impending, should the Civilization remain confined into the boundaries of the closed world philosophy? We can list a bunch of global risks:

- a) the economical development will be stopped by scarcity of resources and energy
- b) the global market will decrease, due to continuous crisis and shortage of raw materials and energetic resources
- c) the regional conflicts and terrorism will increase in number and intensity, due to a continuous economic crisis, and the decrease of markets and jobs
- d) the shortage of energy sources will lead to increase the risky activities, such as drilling deep underwater, building nuclear plants where the seismic risk is high, increasing the use of coal and oil
- e) the continued use of oil and coal will worsen the environmental pollution, like acidification of the sea waters
- f) keeping on throwing dangerous wastes into the sea will compromise the source of life on Earth, decreasing the fish resources, just when the increased world population would need it more
- g) possible climate changes – be they warming or cooling, due to human industry or to natural changes like solar activity – will cause large destruction of lives and economy
- h) a possible impact with a Near Earth Asteroid or a Cometoid could cancel the life on Earth in just a few days
- i) last but not least, a global nuclear conflict, though less probable after the end of the cold war, could destroy our civilization as well
- j) environmental crisis and famine could lead to vast number of people moving that results in conflict that could all too easily slide toward nuclear madness
- k) generalized cultural lethargy, derived from loss of hope, could lead to the potential of mass suicide.

The above is an incomplete list of the global risks that our civilization is running, today, not in a distant future.

The SRI wants to develop the knowledge about the global risks, with the help of universities and research institutions, and setup a risk mitigation plan, to be submitted to all the Earthly governments. We aim to associate a world wide survey, asking people to give their feelings and impressions about global risks, possible countermeasures, their availability to support such



countermeasures and to exercise pressure on governments, for a policy more oriented to human safety and to the future.

2.2. Detect the most promising space industrial development line – Abstract (proposed by Alberto Cavallo)

In the SRI forums, many of our members discussed several ideas, trying to identify the best catalyst of the Space Renaissance. Some of us supported Space Tourism, some others SBSP, Moon Industrialization, Orbital Industries, NEA Mining, Orbiting Debris recover and partial reuse, to build the Geo-Lunar System Infrastructure, and others. The SRI is strongly aimed to support the best “champion” industrial activity, who can raise huge capitals on the market in few years (both by investments and by selling new space services), and self-sustain the enhancement of astroanautic technologies.

All the discussions were animated by passion and good will, but we need more. We need a scientific assessment, based on figures, statistics and trends. We will propose this project as well to universities and research centers.

The most promising solutions should be investigated and compared, in order to define a strategy for the industrial development of space.

Let us resume a first list of business activities in space considered to be used to bootstrap the process:

- space tourism
- space based solar power
- Moon and near Earth objects mining/settling of transformation industries for:
 - rare elements
 - construction materials
 - propellants
 - water
 - etc.
- orbital debris recovery
- etc.

For the most promising activities the preliminary business case shall be studied:

- market analysis
- technological needs
- capital costs including investments in research, if needed
- operational costs
- time schedule

This could be done with the cooperation of the academic world (universities, business schools, polytechnic institutes).



2.3. Feasibility study and virtual mockup of an O'Neill habitat, to be settled at an earth-Moon Lagrange Libration Point – Abstract (proposed by Kim Peart)

There are some treasures more or less unused, if not forgotten: these are the works of Gerard K O'Neill during '70s, Krafft A. Ehrlicke in the same period, Werner Von Braun and others. They are not forgotten, because we at SRI, and many other space advocates never will forget our beloved Maestros.

The SRI aims to retake the road traced by them. So, to start, we propose a feasibility study, and the construction of a virtual model, of a Lagrange O'Neill City.

This project, like the previous two, can be proposed to universities for graduation works. Choosing the best ones, we will pass to the second stage of the project, the construction of a virtual model, which will be virtually visited by everybody, and also bring some cash to support the Space Renaissance.

Different models should be traded-off: the O'Neill Cylinder concept, the Torus concept proposed by Von Braun, and possible other models. The great vantage of any spinning structure, vs. Moon settlements, is the possibility to simulate the Earth gravity at periphery, while allowing zero G at the center of the structure.

At a more advanced stage of the project, shares of the future Lagrange City could be sold to share holders.

A major problem for orbital space settlements will be solar and cosmic radiation. Those problems should be specifically addressed by the designers.

The orbital space settlement could prove to be a major draw-card for popular interest in space, by potentially allowing investment in a concept that could be build. This may be in a form of share purchase, which would generate funding for research, development and construction. The essential design is very simple and a brochure could be made to invite investment when the virtual world model can be experienced. A sales office could be established in the virtual world, as well as in real life.

Many people have purchased block of land on the Moon, making millions of dollars for the people who ran or still run the schemes. Are these blocks real and realisable? How much more realistic an orbital space settlement proposal would be, which can be real and can be realised; and the market can extend as far as the interest grows, as any number of orbital space settlements can be built in space in the future. Shares purchased may be realised in the near future, or could become part of the family inheritance.

A major challenge for developing an orbital space settlement in a virtual world is the provision of a gravity that extends out in all directions from a central line. Once this gravity environment is available, if it is not already on the market (unable to find such a product yet), it will be possible to proceed with this project. Virtual world environments can be purchased off the shelf and the owners and users then proceed to develop the in-world environment to their own liking and wishes. In the same way, the provision of an orbital space settlement gravity environment could be an off-the-shelf product, which owners and users could then develop to their own likings and wishes. The product could be a virtual world of its own, as if in space, in which any number of orbital space settlements could be located, or, if possible, inserted into an existing virtual world as a sky box, which users can teleport into from the surface.