The **M**cCoy **A**scension **P**lan

The Lagrangia Triangle and Humanity's Exodus Into Space

Enough Pessimism

- Hundreds if not thousands of apocalyptic/zombie shows have been made in the last 50 years.
- The ratio of pessimistic to optimistic sci-fi shows has risen sharply and is not waning.
- The industry that makes these shows either feels that our future is bleak, or that media consumers want to see shows about bleak futures, or both.
- Humanity has innovated its way out of every disaster in history, whether self-inflicted or not.
- Our future is bright, exciting, and breathtaking!
- **Lagrangia** is our future. It can eliminate nearly all negative pressure exerted on Earth by humanity.

The World Is Not Enough

- The world-wide media has settled into a pessimistic attitude that the next generation will have less and must settle for less. We are de-evolving.
- Mankind cannot properly evolve as an introspective, close-circuited creature. Our small number of geniuses must increase so that our knowledge can increase. This means our population must increase - a lot.
- Earth can only hold a finite number of humans. As soon as the Earth exerts enough pressure against humanity's growth, humanity will be forced leave.
- When the majority of the civilized world realizes on a gut level that humanity's future is in its growth, and that Earth is nothing more than a crib, our de-evolution will end and we will be begin to evolve again – in space.

Three Generations

- This presentation outlines a new plan to transform Earth-dwelling humanity into space dwellers and explorers.
- Our generation can provide the foundation for the space exodus and gain a permanent foothold in space – in 20 years thousands of people can be permanently living and working in space.
- Our children can grow up dreaming of living in space – in 60 years more than 1 million people can call space their home.
- Our heirs can live in a time when Earth-dwelling humanity is the minority and Earth is thought of as a resort instead of home.

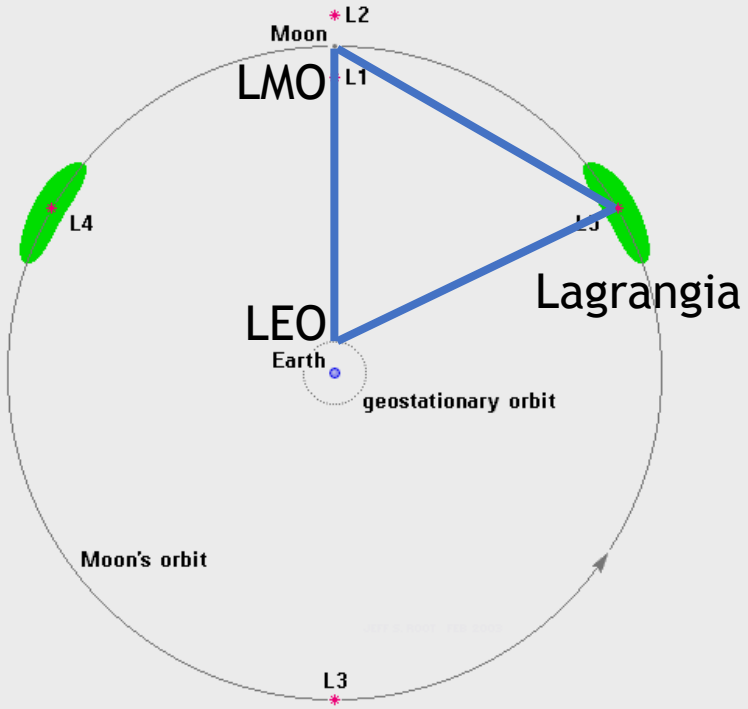
Gerald K. O'Neil and Lagrangia

- The High Frontier, written by Dr. Gerald K. O'Neill of Princeton in 1976 provided an excellent outline of how to step into life in space.
- Space has unlimited solar energy and mass resources. The Earth-Moon Lagrange points 4 and 5 are natural gravity respites where billions of humans can live. These areas in space, about 250,000 miles from Earth, will henceforth be referred to as **Lagrangia,** in honor of Joseph-Louis Lagrange, an Italian mathematician and astronomer, who developed the math that predicts the location of points of balanced gravity.
- Humans require **ELGAR** habitats to remain human. ELGAR means Earth Like Gravity, Air, and Radiation. Also, proximity to the Earth is a requirement of a healthy culture and economy. Mars and the Moon are not ELGAR.
- Earth-like gravity is a REQUIREMENT for humans to remain human and can be replicated by spinning very large stations that are thousand of meters in diameter.
- Humans born on the Moon (16% Earth's gravity) or Mars (38% Earth's gravity) might not be capable of surviving on Earth and might not be considered human.
- Lagrangia is an achievable new home and can be settled in steps convenient to our needs and timetable.

Quotes from Delta-V by Daniel Suarez

Pages 79-81, 145

- “Colonizing Mars is madness”
- Mars gravity is only 38% of Earths - Humans living on Mars would suffer bone and muscle loss, eye damage, and the viability of pregnancy is questionable
- Martian soil cannot support plant life without lots of added nitrogen
- The Martian surface is covered with perchlorate - salts that are classified as industrial waste here on Earth. In California the legal limit is ONE PART per billion by mass - the concentration in the Martian regolith is SIX MILLION parts per billion.
- Mars is 33.9 MILLION miles away
- “Mars is a !#%^@ trap! It’s a gravity well that will suck in mankind’s future. At best it’s a research location or an interesting vacation spot for your grandkids - but it’s not a place for humanity to live.”



The Lagrangia Transportation Triangle

- **LEO** - Low Earth Orbit station
- **LMO** - Low Moon Orbit station and moon base
- **Lagrangia** - Space stations at L4 and L5. L4 and L5 complete equilateral triangles with the Earth and the Moon and are therefore only about 250,000 miles away from both.
- Three different vehicle types are required
  - Earth gravity to space - **LEOcraft**
  - Moon gravity to space - **LMOcraft**
  - space to space - spacecraft
- Before Lagrangia can be settled, this transportation triangle must be up and running.
- Vehicle specialization is key to an economical transportation infrastructure.

LEO (Low Earth Orbit)

- ELGAR space stations hundreds of miles from the surface of the earth will become Earth's transportation terminals.
- The LEO economy will be based on transportation, tourism, and electron-based professions(primarily software development and other products that are created and delivered virtually).
- Earth political policy (especially tax and ownership laws) must be tuned to make the LEO economy vibrant. For instance, money earned in space cannot be taxed on earth.

Moon Base

- Although humanity cannot permanently live on the Moon due to its low gravity, the Moon can host a permanent base from which visiting workers can mine, process, and deliver much of the raw materials needed to build Lagrangia.
- LMOcraft, designed to travel between LMO and the Moon, will greatly reduce the cost of maintaining the base.
- A combination of LMOcraft and the Moon base's ability to "hurl" material directly to "catch stations" at Lagrangia, will provide the supply line needed to build a human population at Lagrangia that surpasses the one on earth.

Low Moon Orbit Station (LMO)

- The LMO station will be needed to provide connections between LMOcraft, spacecraft and LEOcraft.
- The first LMO station will be much like the first LEO station but will probably focus more on moon material mining operations and tourism.

Lagrangia

- Stations in Lagrangia will be more varied than current human ethnic groups.
- Large stations will provide ELGAR accommodations: they will rotate to provide earth like gravity, use lunar and asteroid mass to provide radiation shielding, and utilize the water and air, provided from LEO, LMO, and asteroid processing facilities.
- Large stations can provide Earth like gravity via rotation, because they spin slowly enough for the rotation to be unnoticeable.
- Large stations will be miles wide, have enough atmosphere to have their own weather, and be home to millions of people.
- Stations can be designed for specialization in agriculture due to the 24/365 growing season, manufacturing due to variable gravity, and tourism (a station can choose any climate it wants, so some may want to be ski resorts).

The Point Of It All

- When Lagrangia's population surpasses Earth's, humanity will no doubt turn its insatiable appetite for knowledge to the further reaches of the solar system and beyond.
- Only by making space our home will we build the knowledge needed for humanity to take the next step – a permanent culture of space explorers. These people, our heirs, will be the ones to "figure it all out" and "meet God".
- Lagrangia is the next logical step in human evolution and in the accomplishment of our purpose – to understand the point of it all.

Lagrangia's Toughness

- Humanity on Earth can be wiped-out by one meteor, one solar flare, one pandemic, or nuclear war
- In the words of Stephen Hawking, "With climate change, overdue asteroid strikes, epidemics, and population growth, our own planet is increasingly precarious."
- Lagrangia's modular and mobile nature makes humanity more impervious to these threats.
- Dividing humanity between Earth and Lagrangia makes humanity more durable and tougher.

When

- There is plenty of ELGAR space here on Earth. A flight over central Florida and over the continental U.S. begs the question, ” Why trouble with settling Lagrangia?”
- We really don’t know when humanity will surpass Earth’s capacity. It could even be now.
- Should we settle Antartica, the bottom of the ocean, and the rain forests before venturing to Lagrangia?
- If it is economically possible to remove human pressure from the Earth, humanity should grow off-Earth instead of on-Earth. And we should start now.

Steps

- Lagrangia's creation can only be done once the Lagrangian transportation triangle is up and running. This will require at least three distinct classes of vehicles:
  - **LEOcraft** – these vehicles provide access to LEO from earth and can ideally take off and land at conventional airports.
  - **LMOcraft**– these vehicles provide supplies between the moon and LMO stations. The driving force behind their design is to provide access between a 0 gravity location and the moon (18% Earth's gravity).
  - **Spacecraft** – these vehicles are pure space ships, providing service amongst zero gravity locations
- The **first step** must be the development of competing fleets of LEOcraft providing service to the first permanent LEO station.

LEO & LMO

- The second step in the development of the Lagrangian triangle is creating one of its sides, between LEO and LMO.
- The LEO and LMO stations will need massive amounts of radiation shielding. Having a moon base will allow most of the needed material to come from the moon. It is cheaper to move material from the moon's gravity well than from the Earth's gravity well.
- The development of this one side will achieve the development of the three types of vehicles required for the Lagrangian triangle to be operational.
- Getting this single side of the triangle up and running will lead to both LEO, LMO, and moon tourism, and the beginning of the off-Earth economy.

First LEO Station is Partly Built

- The International Space Station, a $100 Billion investment in space, can be the *construction trailer* for the first permanent, Earth-like gravity LEO space station, LEO 1
- Instead of letting the ISS fall back down 254 miles to Earth, it should be used to leverage our foothold in space. The ISS will allow our construction teams to live on-site until the last part of the ISS can be re-purposed as part of LEO 1.
- This first space station should be ambitious enough in design to catch the imagination of children everywhere so that it becomes a common dream to visit it.
- LEO 1 will need to be part transportation terminal, part resort, part amusement park, part corporate park, and part scientific station.
- LEO 1 should be large enough to be ELGAR and to be seen by the human eye from Earth.

Up and Running

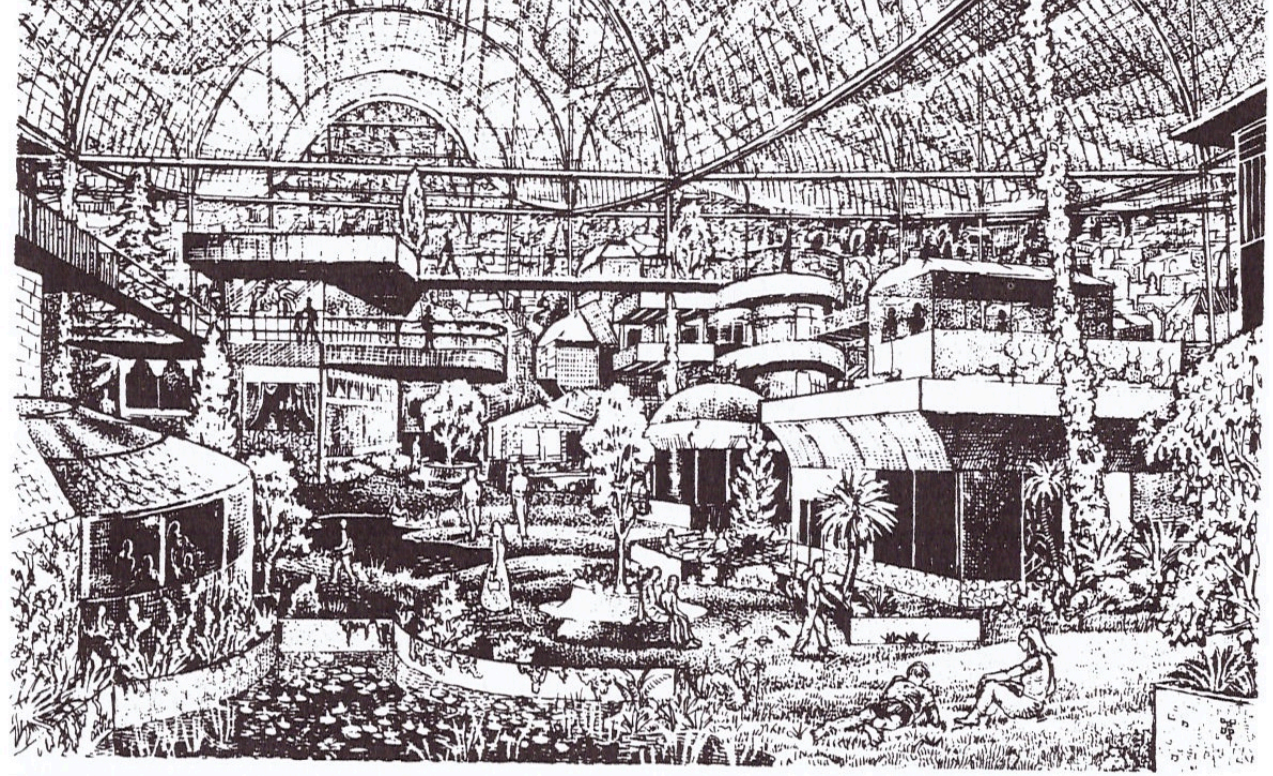
- What does it mean to have the LEO-LMO side of the Lagrangia triangle “Up and Running”?
- In 2009, NASA’s LCROSS mission shot a rocket into the moon to fling plumes of moon rock into space. An analysis of this mass found it was 5.6% water. Splitting water into Hydrogen and Oxygen (which is very cheap with unlimited solar power) and then liquifying the results yields rocket fuel. The moon is made of rocket fuel, not cheese.
- With abundant fuel, spacecraft on the LEO-LMO side of the Lagrangia triangle can provide earth-like gravity by accelerating at 32.2 ft/sec/sec for the first half of the journey and de-accelerating at the same rate for the second half of the journey.
- The 250,000 mile flight will take just over 3.5 hours and will have earth like gravity.
- When these flights happen daily, and provide hundreds of seats at the cost of a day’s wage, the LEO-LMO side is “Up and Running”
- Enjoy Earth for breakfast, LEO for lunch, and LMO for dinner, without spilling your cocktail.

Earth Emigration Agency

- Earth Emigration Agency - A new international agency will establish, maintain, and promote space exploration standards. Everything from standard hatch sizes to standards for air filtration and fuel transportation must be created and maintained. World-wide research and engineering efforts must be organized, subsidized, and monitored. Initial funding will be through donations and endowments.
- Immediately, a portion of NASA's budget should be directed to getting the first side of the Langrangia triangle up and running.
- There should be several different companies competing to build the vehicles and stations.
- If we are forward thinking in our legal and tax policies in regard to LEO 1 and LMO 1, their economies will flourish, which is required for space to be populated. Legal and tax policy leeway WILL BE CRUCIAL.
- This is just like settling the American West. It will happen if enough people think that it will enrich them.

Lagrangian Culture of Innovation

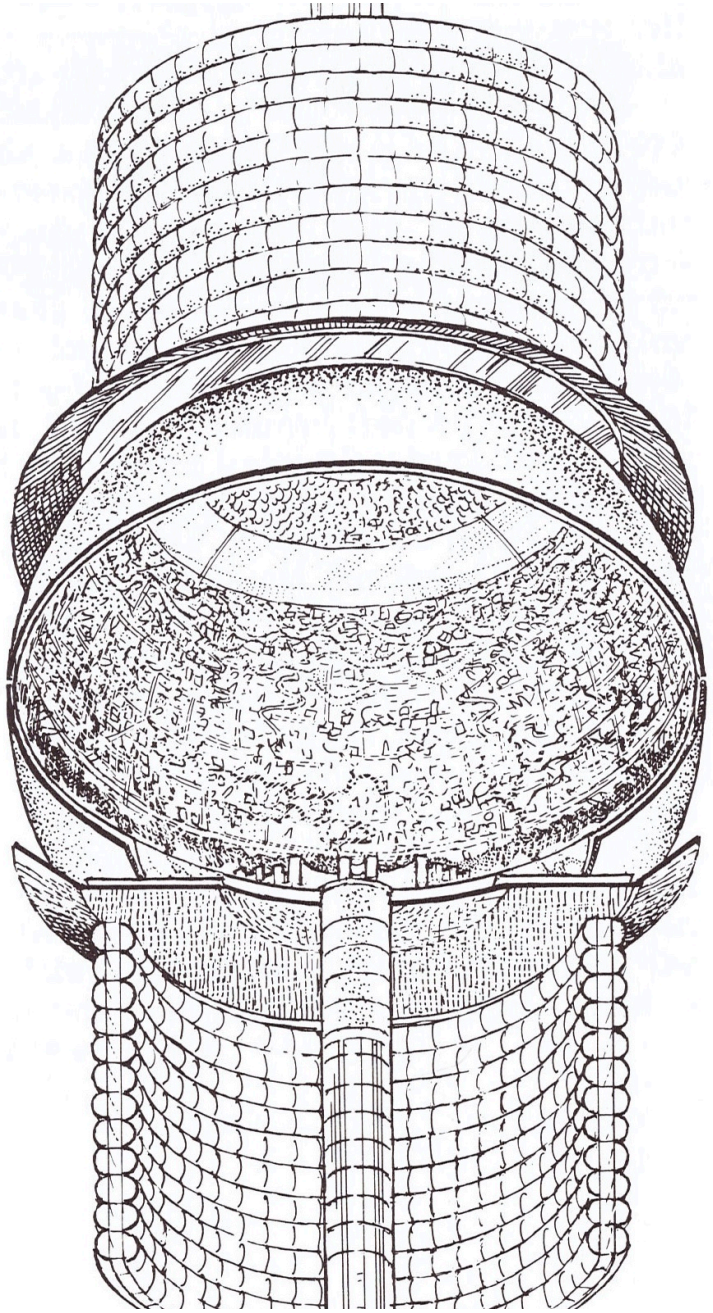
- The Lagrangian Constitution must be created and ratified by citizens of Lagrangia, and Lagrangians must provide for their own government and elections. It is imperative that the Constitution contain the basic elements in common with the Constitutions of nations known for innovation: protection of the individual from the tyranny others.
- The Lagrangian Constitution must have at its center a bill or rights for the Lagrangian citizen so every Lagrangian feels free to pursue their dreams and exercise their liberties as long as they do not infringe on the liberties of others.
- Innovation will be the life-blood of Lagrangia and will be the single most important force in establishing additional footholds in space. The Lagrangian Constitution must lay the foundation for perpetual innovation.



Crystal Palace habitat;
residential areas in sunlight

Torus interior.

Life in Lagrangia – From The High Frontier



Island One and Moon Base – From The High Frontier

Possible LEO 1 - From The Film Elysium

Conclusion

- **Lagrangia Triangle** provides the most cost effective way for humanity to move into space
- **Lagrangia Triangle** provides a step-wise approach to a space exodus, with each step being economically practical and then self-sufficient
- **Lagrangia Triangle** provides a simple vision that can be understood by everyone on Earth
- **Lagrangia Triangle** is achievable initially by a temporary multi-national sales tax and then by its self-sustaining and ever growing economy based on unlimited energy and raw materials
- Human ambition is UNLIMITED, while Earth's resources are not. The only reconciliation is to utilize non-Earth resources.
- It has been prophesied, that the meek shall inherit the Earth. This will come to pass. The rest of us are leaving.

Contributors

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