space the final frontier

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"If we do not develop the resources of our frontier, we will find ourselves facing increasingly high energy prices, increasingly steep commodity prices, and a slowing economy in the face of rising unemployment and poverty."
William Mook − 1986

A sampling of recent headlines
The Wall Street Journal
April 25, 2008

"A proposed $7 billion downtown Seattle project became the latest major urban development to be scotched or delayed because of the credit crisis and a faltering economy."

"Merril's CEO defended directors at the annual meeting from blame over the firm's losses."

"Commercial banks increased their use of the Fed's discount window this week."

"New home sales slumped an unexpected 8.5% in March."

"Microsoft's profit fell 11%"

"Motorola's loss widened as handset sales slid 39%"

"American Express posted a 6.2% drop in net as loan loss provisions ballooned"

"Credit Suisse swung to a loss on $5.2 billion in write down for major buyout loans."

"US Airways and Alaska Air reported losses"

"A strike at a Scotland refinery this weekend could force BP to close a key pipeline which could have a big effect on the UK.

"Whirlpool's earnings slid 20% amid costly materials and weak US demand"

"Northrup's net fell 32% hurt by problems at its Gulf Coast shipbuilding operations"

"Brazilian Mining Titan takes on Global Giants"

"Honda Motor's earnings are likely to provide a gloomy reminder of the tough times the auto sector faces amid the stronger yen, high materials prices, and sluggish US auto demand."
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* NOTE * This all could have been started in 1958 and completed by 1989
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YEAR 1 to 3 − $6 billion

An airframe built around the design for the space shuttle External Tank. 39 meters longer with the same diamter and equipped with an aerospike engine at its base the flight article masses 1,000 metric tons at lift off. Propelled by an engine housing five RS−68 pumpsets, the engine has a maximum thrust at lift off of 1,450 tons. It masses 120 tons empty.

The airframe is equipped with a cross−feed capability, fold away wings similar in operation to those of a Tomahawk cruise missile, though the wings here are larger in size − appropriate to the 120 ton empty mass. Its nose houses an advanced thermal protection system, based on technology developed for the NASP and SSTO programs, but configured as a 1959 − winged Titan.

The flight element takes off vertically on its altitude compensating rocket engine, while gliding to a landing horizontally. The vehicle slows from flight speed to subsonic speeds behind its nose mounted thermal protection system. When slowed to subsonic speeds, the fold−away wings deploy and lift to drag rises from 1.5 to 1 up to 15 to 1. At this point a GPS guided aircraft flies to the gliding booster and snags it mid−flight and tows it back to the launch center where it is released for a gliding touchdown − using much the same software and equipment as a Predator aircraft.

In its simplest configuration, this booster is equipped with a 300 ton upper stage propelled by one RS−68 engine and ringed by 6 RL−10 engines. It carries a 75 ton payload to orbit. This stage separates when the main booster burns out at 3.8 km/sec − and separates to be recovered downrange. The 300 ton booster has the same diameter at the ET sized booster, but is much shorter. It is equipped with a heat sheild at its base and accelerates to orbital velocity capable of placing 75 metric tons into a 300 km altitude orbit. The vehicle deorbits and lands vertically DC−X fashion, for complete reuse.

Aa more advanced configuration consists of 3 boosters staged in

parallel. The two outboard boosters feed propellant to the central boosters while all fire at lift off. The two outboard boosters drain first and are released down range and are recovered. The central booster continues to orbit, carrying a 300 ton payload. This payload may be a fully loaded third stage that kicks a 125 ton lunar lander/ mars lander along a free return trajectory to either of these worlds − with return of the kick stage − or a 150 ton solar power satellite to GEO − or carries 22 communication satellites in a bus to deploy along a single orbital plane.

YEAR 4 to 7 − $9.5 billion

A fleet of five vehicles allows launches twice per week to support a wide range of space services, including lunar and mars tourism, deploying communications and power satellites.

The lunar lander uses rockets to land vertically on the lunar surface carrying 25 tons of useful payload and returns it safely to Earth. The rocket aerobrakes and lands vertically by rocket power upon its return. The lander may carry 3 tons both ways and deposit 40 tons on the lunar surface in 'freighter' mode.

As a mars lander the vehicle aerobrakes at mars and lands fully fueled. The kick stage that accompanies the lander to Mars is equipped as an advanced Skylab style space station − launched 'wet' − once drained − is used as a habitat for the crew − and the two vehicles are tethered together, like the earlier Gemini experiments − to produce a low gravity environment during the 90 day transfer. The lander with crew separate from the transfer stage, and land directly on Mars after aerobraking − executing a vertical rocket powered touch down. The kick stage on a 2 year orbit − returns to Earth 21 months after Mars encounter − the orbit after passing Mars is deflected and passes Mars again on its way back to Earth. At that point, the crew in the lander, blast off from Mars, and rejoin the transfer stage on its return to Earth − both vehicles execute an aerocapture maneuver and execute a powered touchdown − to be reused. The payloads are comparable with 25 tons of payload sent to Mars and returned to Earth, whilst 40 tons may be sent one way, with 3 tons returning.

YEAR 8 to 10 − Break even

A 150 ton solar power satellite consists primarily of a 5 micron thick film formed into a donut shaped balloon with a large parabolic concentrator at the center. At 8.25 tons per square kilometer, this satellite is 2.4 km in diameter and generates 2.175 GW of laser energy which it beams to Earth continuously to solar panel arrays already established on the surface − increasing output 16x from pure solar panel operation. At $0.03 per kWh for energy this satellite generates $571 million per year − and has a life span of 30 years.

22 communications satellites placed into the same orbital plane, form

a ring in polar orbit around the Earth. Open optical communications provide a broadband optical communications backbone among all satellites at 50 terahertz. Each satellite is equipped with phased array antenna that uses GPS signals to paint stationary doppler corrected virtual cells over the Earth beneath the ring − allowing simple wireless communications chip sets to communicate digitally through the network. Each satellite operates as a router for the network.

30 orbital planes are populated in this way − 660 satellites in all − to provide 5 billion channels and earn $100 billion per year for communication services. Banking and financial services provide additional revenue. Telepresence and telerobotic services add still more revenues and generate more wealth for Earth.

Year 11 to 12 − Expansion

A seven element launcher − 7−up configuration − puts over 500 tons into LEO − and allows the placement of 250 tons into GEO for a larger more advanced 4 GW powersatellite that generates a cool $1 billion per year for 30 years − with zero recurring costs.

Unlike today's space launch providers, this aerospace operation is a one stop shop, where payloads and boosters are built, operated, maintained − for a piece of the action.

The 7−up configuration (painted lime green with bubbles) allows larger landers and transfer stages to operate off−world, allowing 90 tons to be deposited one way − and 50 tons on a round trip. A small fleet of 30 passenger interplanetary stages along with 90 ton freighter stages − provide regular service between Earth the Moon and Mars. 300 people are supported on Mars, and 6,000 people are living on the Moon.

The development of water sources found locally both on the Moon and Mars cause logistics to improve to the point where 1,500 people are supported on Mars and 30,000 people are supported on the Moon by this operation − without any increase in fleet size.

Meanwhile, the revenue from communications and power satellites continues.

Year 13 to 15 − Break through

Experimentation with inertial confinement fusion continue, with the development of a fusion power satellite powered by a boron−protium fuel mix (borane) secondary initiated by deuterium−tritium 'primary' and a hydrogen−flouride laser 'initiator'. A 40 billion watt fusion powered satellite is placed in GEO − and generates $5 billion per year − beaming energy to Earth at 1.5cents per kWh.

The aerospike engine on an older chemical powered flight element is

converted to a 1,500 ton thrust nuclear pulse propulsion system − using a 'magnetic blanket' momentum transfer system. The vehicle before conversion weighed only 120 tons − but with an added 300 ton nuclear pulse engine − and permanent payload fixturing − the empty mass has climbed to 450 tons. It is capable of carrying 100 tons of propulsive units, and 500 tons of payload. The vehicle is capable of sustained gee flight − and flies directly to the moon and back, in a matter of hours, and directly to Mars and back in a matter of days.

Successful flight testing of this experimental craft leads to the wholesale conversion of the entire fleet of flight elements to nuclear pulse propulsion. The number of people capable of being supported on the moon rises to 1,000,000 − the number of people capable of being supported on mars rises to 200,000 − with conversion of half the chemical elements to nuclear pulse spacecraft.

The other half are converted to asteroid exploration and development.

Meanwhile, MEMs based propulsive skins have undergone a decade of development and with laser energy beamed from space, are now ready for prime time.

Year 16 to 20 −Transformation

Here, 300 tons and a crew of 80 are flown to various points in the asteroid belt in less than a week. In a few months each vehicle examines thousands of small bodies and begins returning to Earth orbit a steady stream of specially chosen 'rich' asteroidal bodies of appropriate size composition and consistency − in the end, a 100 m diameter body arrives at Earth every 20 minutes. Here, a fleet of nuclear pulse spacecraft rendezvous with each returning body when it is 3 million km from Earth and shepherd the body safely into a precise polar orbit above the terminator of Earth. There, other spacecraft loft 500 ton remotely operated factory elements, to mine the asteroidal bodies and smelt out needed materials. Those materials are formed on orbit into industrial goods, that are assembled into large pressure vessels. These pressure vessels form factories that produce finished goods and durable consumer goods, using tele−robotic labor with a small space based crew. Ultimately farming and forestry satellites add non−durable consumer goods − food, wood, clothing, and paper products − to the mix of products available from space − delivered directly to consumers in small automated propulsive packaging.

Year 21 to 25 − Revolution

With increasing transfer of industrial production off world, the demand for industrial and durable consumer goods wanes with increasing demand being placed on non−durable consumer goods. The Pareto principle operates, with 20% of the world's 6.7 billion people, consuming 80% of the resources being produced. Disparity of income

between the 'haves' and 'have−nots' is putting downward pressure on continued expansion, which limits the economies of scale possible with this technology. To increase margins short term from the haves, while creating growth opportunities among the have−nots 'reverse transfer pricing' is instituted through the electronic banking system controlled by the aerospace firm. This basically uses a portion of the profits earned from the haves to subsidize growth among the 3.3 billion have nots.

To avoid confrontation with restrictive policies and regimes, the idle industrial goods and durable goods manufacturing sectors are kept active building Fuller style 'cloud nine' floating cities. Each city is kept afloat by air warmed by laser beam arriving from space. Each city is powered by the same laser beam using bandgap matched photocells. Each sphere is built, folded into a compact shape, and deorbited using a magnetic launcher. It aerobrakes and deploys − built from the stars among the stars − the sphere never touches Earth, but floats like a hot air balloon − capable of supporting 50,000 inhabitants internally. It is also equipped with a fleet of VTOL aircraft − also laser powered but capable of short duration hops using hydrogen and air − propelled by propulsive skin MEMs rockets − adapted from the earlier propulsive packaging.

66,000 spheres are deployed over a 3 year period at a rate of 5 every 2 hours from orbit. These spheres circulate around the Earth focusing on trouble spots, offering aid and assistance, and citzenship, training and work to any in need anywhere at any time. These free flying cities hover between 30,000ft and 70,000ft altitude and travel at nearly 100 mph around the planet − completing a circuit around the world twice a month. Equipped with telepresence and telerobotic hardware − each person in the city may work anywhere or visit anywhere at any time. Pay and activities are planned for each person picked up so that savings accumulate, and individuals pay for their room and board, and over time may buy homes and transport and other assets either at remote locations on Earth negotiated by the aerospace firm, or off−world on orbit, off−world on luna, or on mars, or even the dwarf planets beyond mars.

With the deployment of the 66,000 Fuller 'cloud nines' complete, the industrial component turns to building ultra−low cost pressure vessels on orbit, to create luxurious yet low cost, space homes in large numbers from incoming asteroidal materials.

Year 26 to 30 − Consolidation

With increasing number of people flowing off world − ballistic transport craft which have displaced nearly all long distance air transport − are adapted for Earth orbiting operation. Large numbers of low cost pressure vessels are sold as space homes to individual families − and billions leave Earth.

Larger nuclear pulse spacecraft are built to transport 300,000 tons or more around the inner solar system − in a matter of days. Boron and Lithium resources are found off−world, and used to make large quantities of pulse units. The fusion based laser power satellite, is augmented by solar orbiting power satellites that operate within 3 million km of the sun's surface. Large optics are deployed throughout the solar system, to provide industrial power from the sun, as well as support laser light craft in the outer solar system and beyond. Kuiper belt objects are explored and developed for industrial use − Mars and the Moon are both terraformed, along with efforts to terraform Venus and Mercury, and the larger dwarf planets in the asteroid belt. Very large pressure vessels are experimented with in the asteroid belt, as well as large 'drive in' colony arrays. Propulsive units are adapted and made lower in cost and easier to operate − and are attached to personal space colonies − allowing people to leave Earth orbit in large numbers, and spend time at all the worlds of the solar system.

The population of Earth dropped by 3.3 billion with the arrival of the cloud nines. The bulk of those as they became adept at living on the cloud nines and earning a good living there, elected to leave Earth altogether. So, over this period, Earth's population falls from 6.7 billion to 3.7 billion − with 300 million relocated to the coast of Chile and the uninhabited islands of Indonesia, and the coast of Australia − in self sufficient colonies supplied from space − in return for discounts to each of those nations for space based resources. The success of 3.0 billion people off−world in such short time, along with the first terraforming efforts on Mars, announced plans to terraform all rocky inner planets, and work being done to build truly massive space colonies and space colony arrays beyond Mars, inspires 2.5 billion people in this period to join the exodus off−world − reducing the world's population to 1.2 billion people.

Year 31+ Diaspora

Increasingly sophisticated telerobotics develop into largely autonomous industrial and agrarian robots. The banking systems and payrolls have been planned from the beginning to allow the bulk of workers to accumulate investments and other assets with which they earn an income from something other than their labor. Inheritence laws and tax laws are adjusted to permit intergenerational accumulation of wealth. This creates a very stable banking and economic system, and allows an expansion of consumption as labor rates decline − by making sure sufficient living space, energy, food and materials are created to meet everyone's needs, demands and expectations.

The natural curiosity and excitement of exploration draws nearly everyone off−world. Even those remaining on Earth view their stay−at−home activity in terms of exploration and frontiers. Sub−sea exploration and habitation is at an all time high. Exploration into

the possible social structures of non−human species, apes, elephants, dolphins − becomes an important activity. Rebuilding key moments in the past using humaniform robots − to recreate Paris in the 30s, or New York in the 70s, or San Francisco in the 1900s − turn historically important cities into theme parks.

Off world industrialists buy Earth's major art galleries to create huge collections on Luna and Mars − to add to the new artworks being created on these worlds − while funding research into ecosystems to make space colonies more attractive, lower cost, and higher valued.

In this period the first expeditions are sent off to nearby stars − using two stage laser light sails. Asteroidal debris and Kuiper belt type debris around nearby stars is exploited, along with stellar energy − to build a 'return' lane − allowing low mass single stage laser light sails to operate between systems at 1/3 light speed. A trip to alpha centauri takes 12 years Earth time − 1 way.

Medical exploration and discovery focuses on longevity research as well as stasis research. In this time frame medical results allow a slowing of the aging process first by a factor of 10 then by a factor of 100 − and later developments allow people to choose the biological age they wish to maintain − allowing them to transform their physiology within a matter of months. Other developments allow genetic improvements to be made, and still other developments allow genetically improvements to meld with cybernetic augments − to provide a wide range of improved capabilities.

The number of people leaving Sol start out small, only 100,000 in the first 20 years − but the numbers grow rapidly as quality of life and education levels − especially educational systems relying on computer controlled virtual reality combined with implanted memories and augmented capabilities − provide high skill levels in any human who desires it in any subject. Such humans aided by human level − and later super−human level robotic systems − some humaniform some not − confidently spread out from sol − 1 billion in the second 20 years − and the rest of humanity − in the third 20 years. −

By 2100 AD − most of the people alive today are still alive − and most are living off world. The numbers are;

0.24 billion − Earth
0.50 billion − Earth orbit
0.11 billion − Luna
0.32 billion − Mars
0.05 billion − Venus
0.07 billion − Mercury
0.22 billion − Dwarf Planets − inner
0.03 billion − Outer Solar system
0.14 billion − Kuiper Belt Objects
0.01 billion − Oort Cloud

1.69 billion − Sol Total

5.10 billion − Interstellar Transit
0.01 billion − Nearby Stars within 10 light years

Destination of those in transit
[0.28 billion] − Nearby stars within 10 light years
[4.82 billion] − Perseus Arm Stars −within 60 light years

VLBI optical, infrared and microwave observatories have mapped in detail over 22,000 star systems including planetary systems throughout the Perseus arm. Any evidence of life on any of these 22,000 − either primary or secondary (and 200 may be likely candidates of life) have caused them to be closed to commercial development, and subject of the various interstellar science councils − who are tasked with learning more about these systems without harming them, or even being detected by them − research funded by fees charged explorers to the other 20,000 'open worlds'. With 20,000 open star systems, and 5.1 billion people (mostly in stasis) augmented by genetic improvements, cybernetic implants, and each with an army of superhuman robots − backed by a personal space colony − and all the tooling and systems that implies, each exploring family (think Space Family Robinson) becomes a seed in a human controlled self−replicating machine system.

The average density per STAR SYSTEM − beyond Sol, is;

Sol 1.69 billion (and falling 10% per year)
Nearby 200,000,000 (and rising 5% per year)
Perseus 225,000 (and rising 3% per year)

Most models of interstellar expansion show these rising waves are temporary. Within another 100 years as population growth rates moderate (people in stasis do not have kids) − and expanding numbers of star systems − population density per star system falls everywhere − just as an explosion once quenched continues to expand with lesser and lesser force as its volume increases.

Within 300 years of the diaspora explosion − human numbers fall to trivial levels per star system even around Sol. And humanity reaches an equilibrium point, where further expansion occurs by diffusion − beyond the 60 light year radius.

I am assuming at this stage, within 60 light years of Earth there are no advance technical species we have to worry about − either home worlds or colony worlds − to make a point about human numbers during this diaspora phase. Namely, that beyond 100 light years from Earth − and even the most optimistic assumptions about life in the cosmos puts the nearest technical civilization no closer than 200 light years of Earth − the high densities and massive number of humans we take for granted − is unique to our times. Before the present epoch, humans roamed the wilds in self sufficient bands of a few dozen to a few

hundred − diffusing across the landscape. After the present epoch − humans again will roam the interstellar space in dozens to hundreds of people, augmented with thousands to tens of thousands of humaniform robots with superhuman intelligence, and aided by a virtual Earth − a matrix like computer program very much like that in the movie The Matrix − with all human intelligence scanned and stored and set running in a 1990s to 2010s world − when humanity was at its peak − to act as a social, technical, skill creational and recreational resource for remote human settlements.

We will be well on our way by 2040 −if we start today− toward this world of 2100. In 2040 we should reach technological singularity, with the advent of superhuman computing and robotics as well as advanced medical systems and advanced space systems.

Somewhere beyond 2100 but before 2200 − before population densities fall too far − we may be able to organize the creation of synthetic black hole dusts. Subatomic sized black holes each the mass of a mountain − made from 12 or more shaped masses of iron−56 − collided at 1/3 light speed − to implode to form a black hole. By charging and turning and shaping each piece, the event horizon around each hole may be engineered with great detail. By performing a series of experiements, populations of black holes may be formed by a single collision and set to interact in ways that give more information about spacetime − and that knowledge may be used to create engineered machinery out of black hole populations that may have remarkable properties.

If such machinery can be made to tap into the zero point energy that is propelling the acceleration of the entire cosmos, to create copies of themselves, devices may be made in large quantity at low cost − and made available broadly.

The size of the accelerator net − based on laser light sail technology − determines the frequency with which experiements may be performed. Choosing an out of the way spot far from any star system or planetary system is preferred. Within 50 to 100 years − success should result in amazing capabilities − including

1. time telephone
2. time machine
3. gravity drive
4. dilation drive

time telephone combined with radio telescope allows instantaneous communications over interstellar distances.

time machine combined with dilation drive and gravity drive (arbitrary gee forces) allows instantaneous travel over interstellar distances.

Travel to the supermassive black holes at the center of the galaxy and

mapping them in detail may permit travel in time to any point in time these black holes exist − including 10 billion years in the past and 100s billions of years into the future.

At 1 million gees − possible with a gravity drive − where you fall toward a black hole array at 1 million and 1 gees while the black hole array itself accelerates away from you at 1 million gees − leaving you with a 1 gee sensible force − while accelerating through space at 1 million gees − allows you to travel anywhere within 1 billion light years − and 5 billion time years forward or backward − courtesy of the black holes at the center of our galaxy − within minutes − AND RETURN TO YOUR OWN TIME AND PLACE.

Such technology if possible − and if it is possible we should know within 80 years of today − would allow us to visit any time and any place +/− 5 billion time years out to a radius of 1 billion years − within minutes − at essentially zero cost.

I assume here that we are using the van Stockum zones around spinning black holes to traverse causal−timelike−loops. In this case, you may get stuck in time, assuming many worlds interpretation of quantum physics is right. Using a Thorne style wormhole type time machine − you may traverse back to your timeline no matter what you did in the past.

Again not only is the technology highly speculative the physics is highly speculative.

The point is, there are 100 billion star systems within our galaxy. Laser light sails and space colonies put 20,000 of them within our grasp. Intelligently experimenting with resources and energies available to us through laser light sail technology, allows us to contemplate doing truly amazing things within 80 years. This not only opens up over 10 trillion star systems to our grasp, but 10 trillion star systems in 10 trillion time lines... over a period where our numbers are unlikely to grow beyond 10 billion.

Taking us off world into orbit and beyond, quickly reduces the number of humans on Earth. Laser light sails and personal space colonies take us to the 20,000 nearest stars − and reduces our numbers to 250,000 per star system − while truly advanced technology − reduces our density to about one human in 10 quadrillion star systems.

When we look out into the cosmos − it appears to be largely devoid of intelligent life. The ability of intelligence to span not only all of space, but all of time, may explain this situation.

The only regions that would be off limits, to explorers, and under the control of any remaining governments, and scientific councils, would be our own time and space − when densities were high and slight changes have monumental impact on the future.

In fact, it may be that it overwhelmingly likely that our world was discovered by some distant explorer at some far off time − as a radioactive remnant of a world war fought billions of years ago − in the wake of what was then known as the Cuban Missile Crisis. This explorer tasks some of his self−replicating robots to explore this species further and report back. They examine the radioactive isotopes and map out how the war proceeded and get precise dates for each explosion − and travel to the supermassive black hole at the center of the galaxy, and return to Earth in 1960s − they monitor from orbit, and return in the 1940s − and return again in the 1920s − and so forth − mapping out the entire human race.

They then do an experiment in time. They cause a slight failure in the readiness of missiles put on alert in a place called Turkey − by one of the belligerents. This combined with failures in the other belligerent's system − cause both to question their readiness to fight and win a nuclear conflict. Things wind down, a different path is taken − until 20 years later − when a more advanced space borne system malfunctions − and sends false warning of attack.

Here, the robots of one time line meet the robots of another time line, who mapped a different history − they are the same robots in parallel times − they arrange an exchange of information. They decide to use their improved knowledge of the hu−mans to do another experiment in time. The focus attention on one individual − making a minor adjustment in his psychological conditioning during his upbringing − a Col Petrov − who decides − against all reason − not to give the order to attack their enemy. The world is saved from nuclear annihlation again − for another 20 years. In the 2010s − an array of loose nukes scavanged from a variety of sources falls into the hands of those who seek to throw off what they consider the yoke of oppression from the surviving belligerent − resulting in a limited nuclear exchange. However, a rising power in the world at this time taking advantage of its temporary position to put the remaining belligerent in two previous nuclear wars at a permanent disadvantage, leads to a miscalculation, and a third nuclear annihilation − and a third run in with the robotic dopplegangers from the distant future − along another timeline. The three sets of robots − each adapted to the conditions found on the remnant world − arrange an exchange of information − and postulate another course of action − more invasive than that last. This species though promising − seem quite determined to self destruct. This is seen as a challenge to the robots who received a specific directive to gather as much value from this species as possible for their builders. Even so, there are slight variations along the various timelines, which have the potential to cause disagreements among the three separate lines − sent back by the same species from three separate timelines − meeting at each point where total destruction took place.

On the one hand, the newly arising belligerents that caused such

trouble in the early part of the 21st century, find they are very unlucky indeed. This causes a general failure in their plans, both in what is called China and the area running from Morrocco to Pakistan − the 'backside' of the world − some call it in that age − below the third world even.

The robots also decide to return to this world in what the locals call the 1880s and in that time, inspire fantastical notions about outlandish possibilities in the future − identify humans inspired by these visions − who then find that their careers against all odds − somehow advance − in a harsh and souless world − to allow the creation of the stages − similar to the developmental stages on the builder's home world − who is from another galaxy in another time − but again this species seems determined to die. Their moon, so close and so inspiring − becomes a symbol of impossiblity − not possibility − and even when dragged step by step into the space age − those who brought it about are marginalized and even assasinated by the 'rational' powers that promote death and destruction on this world. Worse yet, increasing presence surrounding the major destructive events along with promotion of life−giving events for this species − attract increasingly negative attention from these same 'rational' powers. Despite several attempts of these robotic emmisaries to make direct contact with these 'rational' forces to address the problem head on − none have met with the success desired.

The central difficulty of the robotic species tasked with saving the human race so that its unique view of the cosmos may be added to the collective conciousness of the universe − is how a human might say it − is that the human perception of the universe is distinctly different than any other species. To a human space and time are a fundamental given − and anything different than spacetime is not only more different than humans imagine − but more different than humans CAN imagine. Likewise, the extremely narrow view of human conciousness, which is also liberating in the personal sense of freedom and 'private' thoughts it affords, is unimaginable to other intellligent species which come to their technical capabilities along quite different routes.

This disparity disappears with the proper description of the cosmos as it is. Time and space do not exist in certain configuration diagrams representing quantum reality. Reality is fixed and changeless in this view, while we build mental models around the ambiguities of our perceptions. This explains the 'paradox' of wave−particle, and various observer effcts that humans perceive. The simplest way for humans to understand the difficulty is to think of a necker cube.

http://en.wikipedia.org/wiki/Image:Necker_cube.svg

This is a simple wire−frame image drawn in 2 dimensions but seen in 3. By choosing how to interpret the way the lines cross − the mind of the viewer can cause the front surface to be one or the other square

in the image. In a similar way stationary images can be made to rotate by changing your mind about them− or waves seem to appear. These systems, a quite natural way to interpret the universe in the context of other intelligences − are so counter−intuitive among humans, that they are seen as optical illusions or tricks of the eye. They are in reality tricks of the mind − and by changing your mind − what you perceive changes. These optical illusions so called − bring about a changed reality which reflects only changes in your mental condition against an unchanging field. Quantum reality is at root unchanging and only appears to evolve based on how you make decisions about the ambiguous bits. These create self consistent models − some of which seem to evolve in space and time − but space and time are merely mental constructs. For example, every human experiences the 'eternal now' − but worries mostly about the future or the past − and avoids the now. Yet any appreciation whatever of the real world must come down to the fact that only NOW really exists. The past is always over the future hasn't happened yet. This points very clearly, even for humans, to the fact that time is a mental construct. Furthermore, if time doesn't really exist, neither does space.

Here is an optical illusion − so−called − that apperas to be rotating.

http://en.wikipedia.org/wiki/Image:Revolving_circles.svg

But its really a mental illusion − based on how you decide to interpret the ambiguities inherent in the picture. Its not an illusion due to any physical defect in the eye − its is an illusion based on how you decide to interpret what you see. This exercises a region of the brain nearly inactive in humans − and can cause great discomforture. Being more comfortable with this effect − and actually gaining some control over it can activate this mental regoin and cause huge changes in the way you effect your reality −

Here is a more interesting one − to convince yourself that this is really not changing − print it out on a high quality printer and look at the paper printout.

http://en.wikipedia.org/wiki/Image:Anomalous_motion_illusion1.png

again − this causes some discomfort among those who are rooted in the spacetime notion of reality. but opening yourself up to the fact that there is ONLY now − and that nothing really changes − this can serve to activate that portion of your brain that controls the events of the world 'out there' that seem to happen to you − but in reality − you choose to have happen to you.

Once this is done − and you feel comfortable − or even look forward to controlling the wavelke patterns in this image you're ready for the next step.

By the way, for any human physicist reading this, note that the wavelike motions against a pattern of particles − recreates in form many aspects of quantum reality.

When you are comfortable with this sort of mental exercise you may then wish to program yourself to have lucid dreams. What happens here, is you will get an idea about something. Start with something small. A small object say. Say you will manifest something − if you don't know what − ask your dream time self to give you an idea. When you have it − ask to dream about it very specifically. It may be a rock, or a flower, a fragment from a machine − a specific article of clothing − anything that you don't now have. When you get a clear image of it during your dream time − write about it, draw a picture of it − and hold the image in your mind − the part of your mind you exercised above. Do this − and in a matter of days − the PRECISE object will show up in your life. Take possession of the object and keep it with you − as proof of your ability to CREATE your own reality.

You have taken your first step into a larger world.

And away from the self−destructive world humans seem bound and determined to create.

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Good luck

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