

Space Settlement: The Journey Inward
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Introduction

I should give fair warning. The ideas you are about to hear are very different from the kind of topics you might expect from an NSS conference. This is not a technical talk, and there are no political or programmatic recommendations. This session is focused squarely on examining why it is that we in this room are so passionate about space exploration and settlement.

Most people interested in space have pat answers as to why they are so passionate about the subject. The answers vary, but are typically short, and if we look closely, they are consistent with the particular worldview held by the individual. For example, someone who identifies strongly with American nationalism might say that they feel strongly about space because it is a way for America to maintain international supremacy. The environmentalist pro-spacer will say that we need to move out into space to help restore the Earth, and will cite a number of ways as to how this could be done. If we went around the room, we no doubt would come up with quite a lengthy list of reasons why each of us is personally motivated to be involved in the space movement.

What I am going to suggest is that perhaps all of the reasons we give to explain our passion for space actually originate from a single source. That source is nothing less than a primordial demand from the cosmos for humanity to evolve to a multi-planetary species.

As you consider the information that follows, it would be great if you accepted these ideas as a compelling intellectual argument. What interests me more, however, is the possibility that you might personally get close to this *source* I just mentioned, and by doing so gain insight into the particular role you are meant to play in moving civilization toward the space settlement goal. Our success in attaining this goal may very well depend on how many of us are willing to boldly take this journey inward.

The ideas and insights I am sharing are the result of an on going inquiry that is by no means complete. As I continue to explore this territory, I encourage any of you who are interested to join me. There are many I credit with helping to shape this discussion, including Konstantin Tsiolkovsky, Gerard O'Neill, Krafft Ehrlicke, and Frank White. I am also influenced by many outside the space arena, especially Andrew Cohen, an important teacher of enlightened thought, whose perspective on evolution is central to this presentation.

To begin to understand where I am coming from, and where I am going with all this, some background is necessary. It all begins with nothing, or I should say the Void. [Slide 2]

The Void, Creation and the Evolutionary Impulse

There is in Eastern spiritual traditions the idea of the Void. This Void is the vast realm of unmanifest pure potential. It is out of the Void that all things emerge into the physical world. First there was nothing and then there was the Big Bang. Though the Void is infinite and undifferentiated, it exhibits an intelligent purposefulness beyond our ability to comprehend. *The Void is also known as the ground of being, the realm of pure potentiality, the place beyond duality, or the God realm.* We need to only look around at the order, beauty and diversity of the world to see that there must be a creative intelligence within all of it, however we may choose to define that intelligence.

When something emerges from nothing, or the Void [Slide 3], it is called an act of creation. Acts of creation have been occurring in infinite ways since the beginning of time. Stringing these separate acts of creation together gives us the illusion of time and space, and is the very definition of evolution. [Slide 4] *Whereas creation describes the moment something is made manifest in the physical world, just what that “something” will be and how it will emerge is guided by the Evolutionary Impulse, which is the intelligent force that nudges creation into specific directions.*

By evolution, I am not speaking about the Darwinian use of the word. I am speaking of evolution as a process that has been on going since the Big Bang. The evolution of life on Earth is just one expression of that process.

It has taken us some 15 billion years or so to get to where we are as conscious beings on this planet in the vastness of the Universe. Each evolutionary advancement—such as the emergence of new species of animal, plant or insect—occurs in response to the Evolutionary Impulse.

Prior to the moment of creation, the Evolutionary Impulse generates a certain tension or pressure on the physical world that prepares the way for a particular act of creation. This process is occurring in every moment in every nanometer of the universe. It certainly occurs with the emergence of a new species, but actually it is the intelligent energy that literally sustains everything. We see its work with each birth of a child. We see it in the formation of stars. [Slide 5]

We also see it in the advance of civilization, technology, culture, and even in the development of consciousness and spirituality. This tension has helped guide human evolutionary development from the cave to the huts to the skyscrapers.

When we speak about the innate urge to explore and settle in space, we are quite literally referring to a particular *evolutionary tension* that has been imposing itself on the consciousness of space advocates: this is the evolutionary demand to move off this planet and become a multi-planetary species.

The Johnny Appleseed Concept [Slide 6]

This evolutionary tension to expand into space is better understood when viewed in the context of what I call the Johnny Appleseed concept. With the Johnny Appleseed concept we are not just interested in human evolution for our own sake. We are also, and more importantly, interested in the evolution of the entire planetary biosphere of which we are a part. As I've said, it is not only humanity that is evolving, but also everything in the universe; including the Earth that sustains us.

Let's look at the history of our planet for moment. From its very modest beginning about 3.8 billion years ago, life evolved on Earth to occupy nearly every inch of its surface. Well before Homo Sapiens arrived on the scene about 400,000 years ago, life had already completely engulfed the planet: the oceans were teeming, the forests were lush and full of mammals, birds and insects—they were all part of an intricate web of systems that miraculously comprised the single living entity that James Lovelock termed Gaia.

Every organic component of Gaia—plants, animals, and humans—reproduces to survive. Even the non-organic systems are part of the life process of renewal—air and water perpetually cycling to remove impurities, periodic fires keep forest from overgrowing, and so on.

Once Gaia had reached the stage of full maturity, she was now ready for her own reproduction in much the same way as any of her constituent life systems. This is not meant as a metaphorical comparison, but as a literal condition of the living planet.

Accepting for the moment that Gaia is a living organism ready to produce offspring, just how would the reproductive process occur? Reproduction would mean somehow sending her seeds to distant planetary shores in the hope that they would take root and flourish. But, how was Gaia to achieve this when no organic life could even reach the upper atmosphere, much less engage in interplanetary space travel?

If Gaia were to succeed, she would need an *agent* capable of managing the resources on the planet to fashion seedpods that could hold samples of her life forms, and deliver those pods to distant points away from Earth. In addition, those seedpods would need the ability to take root once they reached their destination. This was no small task.

Of course, it is humanity that is Gaia's designated agent who will spread the seeds of Earth life out into the cosmos. This is a symbiotic role that may well have been cast for us the moment we first set foot on the plains of Africa. In the President's own words, "it is not a mission we choose." It is in our DNA.

Before going further, I should acknowledge the origin of life theories that posit that the chemical building blocks of life are spread throughout universe via comets and take root on receptive worlds they impact. While this may be a method of spreading life, and I don't doubt that it is, the evolutionary tension I am referring to here is that which is ever seeking to push the most highly evolved forms of life to ever higher orders of existence.

The Johnny Appleseed concept may be a bit much to grasp at first, but consider that symbiosis in nature frequently involves one species helping another in its reproductive process: the bee and the flower, the bird and cherry tree, the squirrel and the oak. Similarly, we are meant to carry the planet's seeds to other places in the solar system and beyond.

This way of looking at the human condition in relation to the home planet can be very challenging because it requires a degree of humility that puts us more in the role of dutiful servant than of the intrepid explorer and pioneer. But, if we can consider embracing this perspective, we will be in a much more mature position to actually succeed in the goal of space settlement.

Expansion & Complexity Traits and the Six Human Archetypes

To better appreciate our role as Johnny Appleseed, it helps to take a close look at those innately human traits that have not only enabled us to survive and thrive for millennia, but that also make us so uniquely qualified to take on the challenge of space migration.

First, however, let's add another important dimension that will run through the rest of my discussion [Slide 7]. The Evolutionary Impulse is able to achieve its purpose as a function of two universal characteristics that relate to what most Westerners recognize as a kind of Yin-Yang pairing—opposing traits that maintain universal balance. *In the model I am laying out, we see this pairing as the tendency to ever expand outward, and the movement toward increasing complexity.* From the moment of the Big Bang, matter in the universe has been perpetually expanding; and at the same time that material has been organizing itself into increasingly complex forms, which ultimately became the galaxies, stars, planets and biological life.

The expansion and complexity traits are also present in the human condition. [Slide 8] And this is where it gets very interesting, not only in terms of human development, but also in how these traits are so well suited, in almost a transparent way, to humankind's responsibility to expand into space.

There are three pairs of human traits that are expressions of the evolutionary tendency to expand outward and to move toward greater complexity. These pairings can be discussed as archetypes that include: the Wanderer and the Settler; the Inventor and the Builder; and the Dreamer and the Survivor. These

are not meant to be comprehensive, but instead are representative of humanity's ongoing evolution in relation to the expansion and complexity traits.

First, we are the Wanderer and the Settler. As the Wanderer, an expansion trait, humans have a desire to want to know what's on the other side of the hill or mountain or ocean. Hostile terrain has never stopped us, though it has been a motivator at times to move on. Even the expanse of the ocean did not intimidate the earliest explorers. Now that any untouched land is protected, surveyed or otherwise partitioned, the only way our desire to wander can be adequately satisfied is by looking upward. The true Wanderers among us yearn to go to the Moon and Mars and are naturally excited about the new Bush vision.

As the Settler, we are always looking for a 'good spot' to rest and make a home. This is a complexity trait that has a need for stability and security that can only be achieved by settling down in one location. As the settler, at first in caves and huts and later in towns and cities, we have been very successful at building barriers that separate us from the many threats in the natural world. Though this tendency has desensitized us to the environment—which has created an imbalance that we must now correct—it also has served to prepare us to build cities away from Earth that will protect us from the unforgiving conditions in space.

Next, we are the Inventor and the Builder. With the expansion trait of the Inventor, we wander in the abstract confines of our own mind ever looking for unique ways to understand and utilize the resources of the planet, primarily for our own productivity, comfort and pleasure. Each invention led to other inventions, and over millennia this trait has brought us to the point where our understanding and ability to manipulate the physical world is nearly limitless. The Inventor has taken us to the Moon and back, and is now poised to bring us into space permanently, if we will only decide to do so.

The companion to the Inventor is the Builder, or artisan. Once the new tools and new ways of doing things have been discovered and developed through invention, they are ready to be replicated. It is by reproducing invention that systems become complex. The light bulb, for example, is a marvel as much for its simplicity as for its function. Put into universal use, however, the electric light represents enormous complexity. The builder will take the prototype space habitat, refine and replicate it thousands of times throughout the solar system.

The last pair of human traits is the Dreamer and the Survivor. The Dreamer is the purest expression of the expansion trait, while the Survivor is complexity in the form of intense environmental assessment whose purpose is threat avoidance.

The Dreamer trait is the desire for utopian purity, a perfect balance and harmony in all life. We are dreamers because we have the capacity to see the full sweep of future history and recognize that humanity is destined to move beyond this

planet. The Dreamer understands that extending the species into space will bear fruits far beyond anything we can currently imagine.

The Survivor realizes that we had better take decisive action or we may not be around for much longer. The Survivor trait in this context is an evolved version of the animal fight-or-flight response to danger. The Survivor can analyze potential threats and take preventive action long before disaster strikes. As we become ever more aware of the dangers that threaten human existence—from asteroid impact to bio-terrorism to disease to global climate change—we sense the survival imperative to do something before it's too late. In addition to the preventive measures we can take on Earth, there is growing tension around diversifying our population into space to guard against the real possibility that some planetary catastrophe might result in a total loss of human life.

Not only have these six archetypes enabled humankind to flourish through the ages, they embody precisely the traits necessary to carry life to other planetary shores.

Evolutionary Impulse and the Human Psyche

We recognize these archetypes in our culture. Each of us can see our self in one or a combination of these six archetypes. Which are you? The Wanderer? The Dreamer? The Settler? Considering which archetypes you most identify with is a good place to be as we move to a discussion about the Evolutionary Impulse and the human psyche. [Slide 9]

At the beginning of this session, I spoke briefly about how each of us has our own set of reasons for supporting space. But, I explained that this desire for space comes from a single source—the Evolutionary Impulse. Even though each one of us is exposed to the impulse in precisely the same measure, our own personal filter is determining how we receive and interpret that impulse.

Here is what's happening. Those drawn to the space vision are born with a particular sensitivity to the Evolutionary Impulse's demand to move off this planet.

As you grew and matured, you acquired a self-sense that was largely shaped by your interaction with family, friends, community and cultural experiences. You also developed certain other cognitive/psychological attributes, such as your capacity for abstract thinking and temperament.

Somewhere along the way, something happened to you that triggered strong identification with the space exploration and settlement goal. On one level, it may have been an "Aha" experience resulting from logical consideration of facts. Imbedded in that "Aha" moment, however, is actually the direct experience, or very close to the direct experience, of the Evolutionary Impulse itself.

Almost immediately your conditioned mind—with all its ideas, fears and desires—attempted to *interpret* that pure experience of recognition in a way that readily fit into what it already knew. As a result the Evolutionary Impulse in your conscious mind became cloaked by the personal world orientation you have cultivated for a lifetime. Pure intent was clouded by who you have become.

For example, if you are someone who is motivated by self-interested—and we all are to some degree—you will focus on how you, personally, can benefit from space endeavors. If you are family-oriented you might see space development as means to ensure a brighter future for your children. If you have a broader world perspective, you may wish to travel into space in the desire to blaze a trail to the heavens that the rest of humankind can follow. How we view space and its relationship to who we are individually is determined by our particular world orientation. But the spark of interest for space—the Evolutionary Impulse in its unfiltered expression—is exactly the same for every space advocate.

The challenge for space advocates is finding a way to return to, or attain for the first time, the unfiltered experience of the Evolutionary Impulse. In a few minutes I will explain how this might be accomplished. The objective with this exercise is to get ourselves out of the way of the process as much as possible so that we are able act most appropriately in response to this evolutionary demand that is already imposing itself on us.

The Space Pioneers and Conscious Engagement [Slide 10]

Konstantin Tsiolkovsky, Robert Goddard, Werner von Braun, and Gerard K. O'Neill were the towering examples of those in the last century who not only felt the Evolutionary Impulse, but also took action in response to it, though they would not have used terminology we're using today. They simply knew the passion for space was present in them and, possessing both the ability and means, they were able to respond to the demand.

Political analysts give far too much credit to Cold War politics for getting us to the moon when in fact Apollo would not have been possible if it weren't for the Evolutionary Impulse throbbing in the hearts of the space pioneers.

To be sure, the Cold War did have a powerful motivating affect on the advance of space technology. This legacy has been both a blessing and curse. The challenge since Apollo has been finding a way to continue the march into space in the absence such a powerful motivator. There simply has not been one. In the intervening decades, many space advocates have been anxiously waiting for another dramatic World event that will spur the next big push into space. The brutal fact, however, is that Apollo was a unique situation that may never be repeated.

As long as we are looking for something outside ourselves that will turn the tide, our evolution into space can only occur, if it does at all, in an *unconscious* manner. To be *unconscious* is to casually hope that some chance occurrence will catapult our movement into space. Should a rogue asteroid, for example, destroy a major city or cause widespread damage, perhaps we would be motivated to build space colonies to hedge against the possibility of the annihilation of our species. Of course, in this game of cosmic Russian roulette we are playing there is always the chance that the next asteroid will decimate civilization altogether, and our capacity for space travel along with it.

To be *unconscious* to the space mandate is also to believe that some distant generation—surely not ours—will eventually pave the way into space. No need, therefore, to take any of this space settlement stuff too seriously. Such an insidious attitude lacks any appreciation for the urgent nature of this enterprise and may, in the end, be the leading cause of our failure.

To be *consciously engaged* in this process, on the other hand, is to wholly recognize the full sweep of cosmic evolution—from the moment of the Big Bang to its multitude of expressions yet to emerge. From this perspective we see clearly that the only course for our species, in this time and place, is to fulfill our destiny to take life to the stars.

In this final stage of evolving to a multi-planetary species, however, it is *us* who must now *consciously* choose to take this enormous next step. The *unconscious* march of evolution is simply not enough to carry this transformation through to completion. We have to step up and consciously take part in the process.

We can no longer be spectators hoping that some chance occurrence will force our narrow-minded society to take action toward space settlement. Unfortunately, even space activists too often use the language of hoping that someday something outside them will trigger our society to take space colonization more seriously.

It is my belief that we will not succeed until many more of us *consciously* recognize the responsibility that was encoded into our species at the very dawn of our existence. Even the great space pioneers were not fully aware this perspective.

Aligning with the Evolutionary Impulse

In order to consciously engage in the space settlement mission, you have to be willing to align yourself as closely as possible with the Evolutionary Impulse. [Slide 11]. Doing this requires a high degree of introspection, but if you go far enough in this effort you will be rewarded in two ways. First, you gain a clear sense of the particular role you are meant to play in humanity's evolution into

space; and second, you will find the strength and confidence you need to actually carry out that responsibility.

One way to begin this kind of inquiry is to examine the origin of your own passion for the space settlement dream. What was the particular moment when the full impact of the space settlement imperative really hit you? Go back to that moment or period in your life when it all first came together for you, and you decided that you wanted to be part of it. It might have been a book you read, a movie, or the Apollo moon shots. Whatever triggered your passion, go back that moment and try to relive it, not in terms of the actual content of what sparked the passion, but seek out the feelings that arose at that time. What was the defining moment that turned interest into passion? Can you recall the sense of awe you may have felt, or a certain clarity in thinking? Some of you may even have had stronger physical and mental reactions.

Perhaps some of you have experienced what Frank White called the Overview Effect, a transcendent experience of wholeness when looking at the image of the whole Earth from space or very high altitudes such as from airplane. The Overview Effect experience is very closely related to what I'm speaking about here.

By deliberately contemplating the moment that the passion came alive in your conscious mind, you create an opportunity to directly connect with the Evolutionary Impulse. If you can actually renew the experience of recognition, your objective is to just be with it, without putting your own thoughts or judgments on it. Allow yourself to just stay in it for as long as you can. The feeling may only be temporary, but if you are fortunate, certain things with regard to your participation in the space movement will begin to make more sense. Over time, your direction, and importance of your role, will become clearer.

For some of you, there may not have been a strong moment of revelation that you can pinpoint. In that case, ask yourself simple questions like "Why am I so interested in human expansion into space?" At first you may play back the answer you've given most of your life. But, as you open yourself up to the possibility that there are other reasons, you will find yourself going ever inward. For example, if you have always said "I've been passionate about the space program since the Apollo days," then ask yourself: "What were the moments during those years that most stand out for me?" Write down, or at least ponder, anything that may come to mind. Try to describe the emotions you felt in those moments. If you get to a point where you just don't see anything more to contemplate, let it rest for a time, but tell yourself that there must be another level of reasoning that you are committed to finding out about. You are not looking for a specific answer, but rather the underlying emotion. If you start to feel the emotions coming up, you know you are on the right track.

You can do this exercise with a friend or with a small group of space advocates. And I challenge you to engage each other in this kind of dialogue while we are here at this conference together.

I realize this all sounds very spiritual, and is perhaps a perspective with which some people may not be familiar or feel comfortable exploring. But, what I am trying to present is not only the *reason* why it is so important to begin the process of space migration, I am also attempting to provide the *means* by which we can become better informed about how to achieve our common goal, and find the commitment to actually see it through to completion. To be directly in touch with the Evolutionary Impulse, in my opinion, will provide all the knowledge, motivation and strength that we need in this overwhelmingly large purpose.

The Great Burden is Twofold [Slide 12]

Of all that I have been sharing with you today, one thing that should stand out is the incredible burden this perspective puts squarely on the shoulders of anyone who understands the responsibility embedded in the space settlement vision.

Perhaps nowhere in my talk was this more apparent than in the discussion of the Johnny Appleseed concept—Gaia's seeds will spring forth only if we fulfill our purpose of developing in space.

This brings us to the final element of the edifice I have constructed today [Slide 13]. The Johnny Appleseed concept is actually just half of a twofold symbiotic responsibility we have to the planet. *On the one side, the space migration imperative is aligned with the evolutionary trait we discussed earlier to expand outward. On the other side there exists a sibling responsibility that aligns with the movement toward higher complexity—stewardship of the planet itself.*

It is no coincidence that the global environmental movement went into high gear shortly after pictures of the whole Earth came streaming back from the Apollo missions. Looking back on our self from the vantage point of space made us realize just how vulnerable we are in this hostile universe.

The evolutionary tension is acting on environmentalists, just as it is on space activists. Some are called to protect and restore the planet's ecological balance, while others are called to engage in planetary reproduction.

The environmental agenda is more widely engaged at present because the risks to the ecology are so pressing and immediate. Any hostility that some environmentalists have shown toward space projects arises from the intense sense of responsibility to focus on the needs of the planet. They have not come to appreciate—and hardly anyone has—that the long-term health of this world requires that we also develop the capacity to leave it in large numbers.

So this is our dual responsibility to the planet that gave us our existence: to protect her and to spread her seeds. It's actually very simple and obvious if you think about it. Both activities are equally essential to maintain the balance of life. Now that we are mature, we must begin to take these responsibilities very seriously. Hopefully, we will soon join with our friends in the environmental movement in mutual respect and understanding of our shared responsibility.

In Conclusion [Slide 14]

The space community would do well to emulate the intensity of environmental activists, and take our responsibility as seriously as they do theirs. From the perspective I've shown today, space advocacy is not a hobby, pastime or even merely a career.

But, this is not a traditional call to action. It is a call to inner-action. A call to contemplation and meditation—for now. There is a huge amount of work ahead of us, and all those who are determined to engage in this battle must be mentally and emotionally ready to take it on. If we can in large numbers begin to align our actions in accordance with the Evolutionary Impulse, then we will ultimately have the greatest possible chance to succeed in the right way and for the right reasons.

The President said the desire of exploration, written in the human heart, is a desire over which we have no choice. Though this is true, we still are confronted with the very real choice of whether or not to *act* in the face of that primordial desire, both individually and as a collective society.

Prenatal research has recently concluded that it is the child in the mother's womb that initiates the birthing process. Like the child not yet born, it is humankind that must choose to initiate its emergence from the home planet, consciously and deliberately.

As I discussed earlier, we also have the choice to *consciously engage* in this evolutionary process, or be satisfied with *unconsciously* moving forward. If we remain *unconscious*, we allow happenstance to dictate our progress, and forfeit what we, individually, might be able to contribute.

The success of this enterprise hinges on enough of us stepping into this challenge *consciously* and acting in a manner that is aligned with the highest purpose and our best abilities. The very survival of the life born on this planet may depend on it.

[Slide 15]