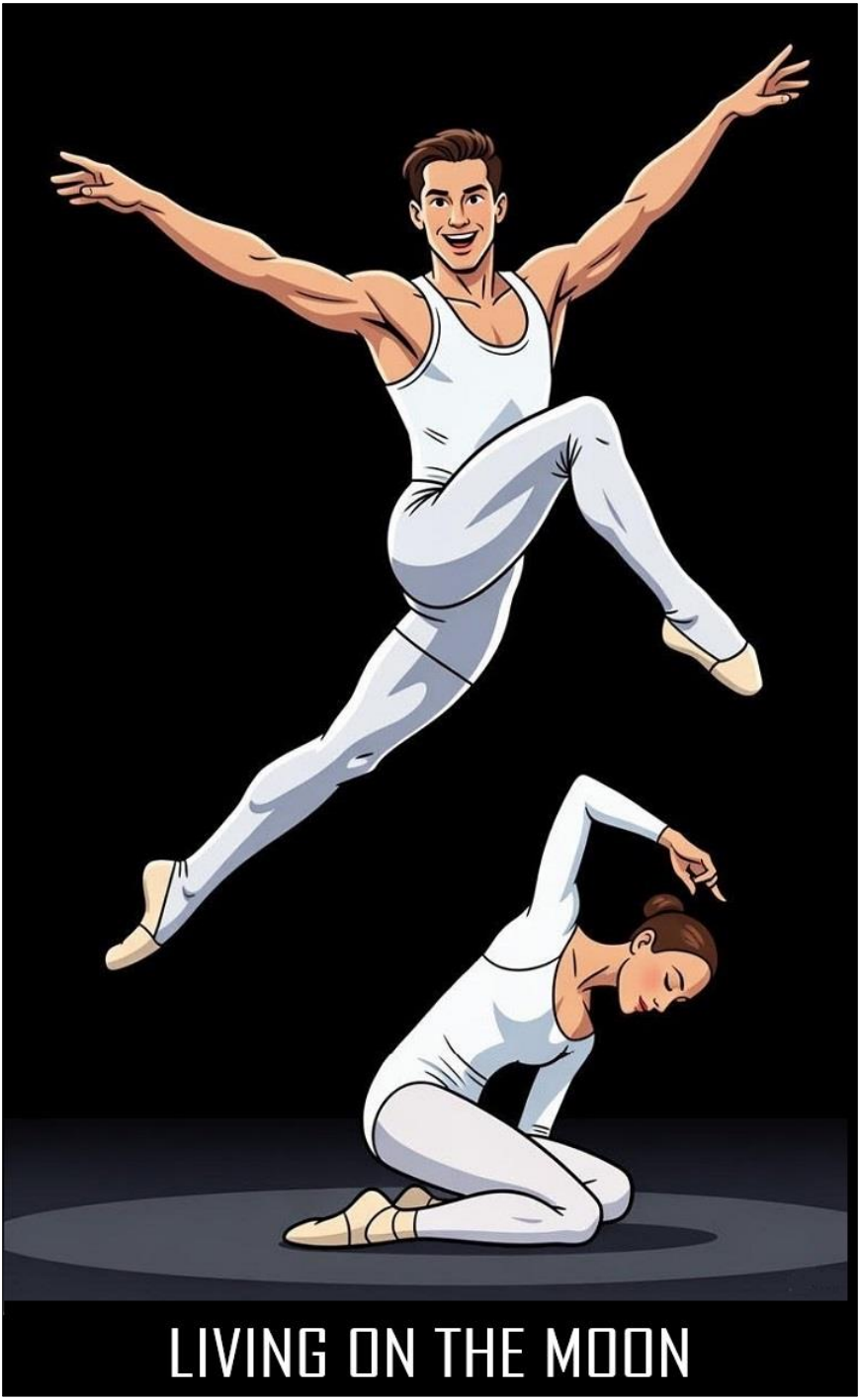

LIVING ON THE MOON

# 20 – Watching History Happen

**SUMMARY**

This chapter points out that the first private crew to settle down off Earth will be historically significant. We can choose to knowingly write that chapter in history and make it an interesting story that parents in the future will want to tell their children. Private individuals starting to spread beyond Earth is at least as historically significant as Plymouth Rock is to the American story. And with the Initial Crew being so connected to all parts of the world through their languages, it won't just represent Americans spreading beyond Earth but, indeed, all of humanity.

## WRITING HISTORY

The goal of the Apollo program was to land astronauts on the Moon and to safely return them to Earth. People walking on the Moon! How amazing is that? And that is exactly what happened. No doubt those working on the Apollo program understood that those first steps on another world and the words spoken would go down into history. Words such as:

**President Kennedy:**
*"We choose to go to the Moon in this decade..."*

**Neil Armstrong:**
*"One small step for man...one giant leap for mankind".*

When we return to the Moon, will it be history making or just a ho-hum repeat of something that happened over 50 years ago? Well, it all depends upon how we go about doing it.

**History in the Making**

We are approaching a point in time that could prove to be a very historic moment (at the level of Christopher Columbus or Plymouth Rock) -- the moment that humans start moving beyond Earth will be looked back upon as when it all started. And just like during the Apollo program we

can know that we are writing history while we do it. But it makes a great difference exactly how we do it.

The current default plan is to do a sortie-class mission with a man and the first woman to step on the Moon, establish a small station in lunar orbit, and then continue with sortie missions until a small permanent base is established. Mostly, the plan is for occasional visits to the base to maintain and conduct some science. That permanent base is compared to the McMurdo station in Antarctica.

Frankly, this is not a very historic approach. Yes, the first woman on the Moon will be a big deal. But it probably will be somewhat below the significance of the first man on the Moon -- Neil Armstrong in 1969. Neither McMurdo base in Antarctic nor even the International Space Station are viewed as turning points in human history. In America, each year we celebrate and retell the story of the pilgrims at Plymouth Rock. But some astronauts going back and forth to a permanent base just isn't at that level. But could we write a different story that generations in the future will tell their children?

## OFF-EARTH SETTLEMENT

**What is Settlement**

The key to writing a truly historic story comes from the true understanding of the term "settlement". Fundamentally, settlement is when one sells their home, moves to another place, and establishes a new home there. We call it "settling down". And a home is where your family is.

So, the basic elements to the start of space settlement would be a permanent habitat with life support and such, families starting with the simplest form of couples, the environmental conditions where these individuals could remain at the growing base for an indefinite length of time, and their base eventually growing up to become a large settlement akin to a town.

**Base Leads to Settlement**

It should be noted that a government base and the start of settlement are nearly identical. In both cases, one needs power systems, permanent habitats, life support, and mechanisms to utilize local resources. Approaches to extending crew stay would help the government both financially and from a risk standpoint and would allow the private settlers

to remain "indefinitely" meaning for as long as possible. Those approaches include telerobotically filling the habitat walls with lunar dirt and the use of an indoor centrifuge to provide several hours of full gee each day.

So, the only difference between government astronauts in this setting and the first settlers is that the former are there only for the job whereas the latter are settling down into their new homes while doing their job.

Due to the similarities, it is here proposed that America's space policy intentionally seek to seize the historic prize of establishing humanity's first, permanent, off-Earth foothold (i.e. the first space settlement). NASA should establish a public-private program to fund company crew whose job it will be to establish some infrastructure and demonstrate protocols needed to establish a permanent presence on the Moon. Then, American and international astronauts could arrive to start building up an International Lunar Base. But the history would be lived out by that Initial Permanent Crew.

**Private Settlers From the Start**

If government astronauts are stationed on the Moon, that is an outpost or a base. It is not a settlement. It is generally recognized that, ultimately, settlement is for the private sector. So, to seize the historic opportunity to write the story of when humanity first began to settle beyond Earth, those first settlers ought to be private individuals. How can that be done at the earliest opportunity so as to secure that prize for the United States?

Chapter 12 of this book describes an approach to developing the Moon including a scenario for how humanity's first, small base could be established. The scenario is that taxpayer dollars fund NASA which in turn funds a company whose private employees settle down into an Initial Permanent Base whether a StarHab or InstaBase. These private individuals would conduct work for their company that has been contracted by NASA. This work would include demonstrations and preparatory work of use to NASA in anticipation of American astronauts landing and establish the first American habitats of the large and growing International Lunar Base. In this way, the first settlers will be private and yet perform work of use to the government thereby justifying government funding.

## WATCHING HISTORY HAPPEN

**Virtual Reality**

There is the real potential of virtual reality (VR) playing a significant role in how the public engages with the program. For example, a pole could be placed near the landing site prior to the arrival of the Initial Crew. On top of the pole would be a high-resolution, $360^0$ camera. While the public is watching 2D video of the crew landings, others could pay to be able to don virtual reality headsets which would give them the impression that they are actually standing on the Moon about to witness this historic event. The VR viewers could look up and see the exhaust of the lander as it comes down to land. Even though the pole is within the gaseous blast zone of the vehicle while it lands, the viewer would, of course, suffer no harm. Immediately upon landing, the suited-up crew could exit the lander and walk right past the VR viewers (perhaps pausing and waving at the viewers).

The VR viewers could then instantly pop over to a $360^0$ camera near the airlock of the initial base as the crew comes to it. They could next pop inside the airlock during entry and pressurization. Then they could pop into the initial base to see the crew as they settle in.

The 2D video could be made free for viewing around the world. But the VR experience could be charged for by the participating companies. If 1% of the world were to pay $50 for the experience, that would total $4.4 billion in revenue. Whether there would be that many viewers willing to pay that much is a question. But the point is that the public's interest could be a significant source of revenue which should be considered. A portion of that revenue could be used to repay NASA's investment in the participating companies.

Other forms of VR could be strategically placed cameras within the initial base, cameras on the rovers, and perhaps a *DoggieCam™* too!

## TV FROM THE MOON

A space program committed to establishing humanity's first, permanent, off-Earth foothold will have plenty of opportunities to inspire the American public and the rest of the world. For the American public, they will feel as though they are getting their space budget's money's worth. They would also identify with the program in that they would watch the crew establishing their home and doing several activities of human interest. For the children, they will have specific role models trained in specific

fields achieving important objectives. And, of course, the kids will simply adore the dog and other animals.

**TV Series**

Several years of TV programming suggests itself which would cover the various phases of the program. Although it is tempting to think about the cameras inside the initial base as lending itself to some sort of tacky reality TV show, in fact, the show would be more real than the over-dramatized antics of reality TV stars. Here is a hypothetical scenario for a set of TV series:

**1st Year Series -** The public would probably be interested in the selection and training of the crew who were going to be going on to become humanity's first, permanent, off-Earth representatives. This series would also cover the history of the rocket, habitat, and hardware development.

**2nd Year Series -** The second year would kick off with the launch and arrival of the historic, Initial Permanent Crew. Then the public would be able to follow their settling in, overcoming any challenges, the steady progress of producing food and equipment using local resources, as well as demonstrating a variety of music, dance, culinary, and other talents.

**3rd Year Series -** The third year could be the year in which, on a weekly basis, international crew from various countries could arrive, be greeted by our Initial Crew of eight, and share elements of their cultures (e.g. food, clothing, dance, music, and animals). They would then go on to conduct their own Apollo-scale exploration of the Moon using a refueled lander. Meanwhile, some crew would also work to set up large habitats dedicated to specific infrastructure needs for a growing base (e.g. a FarmHab). A sports habitat allowing for activities not possible on Earth could form the basis for several interesting shows.

**4th Year Series -** During the fourth year, private individuals could start arriving (on their own dime). Their personal stories could be highlighted, and we would watch as the base begins to turn into a settlement. A modest-sized inflatable "Hotel Luna" could be set up with some wealthy and/or famous visitors. Additional large, inflatable habitats providing amenities (e.g. swimming pool, golf driving range) could be set up during the year, setting the stage for additional private individuals (e.g. retirees) who would need a certain quality of life if they are to move to the Moon.

**5th+ Year Series -** Finally, the development path started on the Moon could be repeated on Mars with StarHabs, specialty habs, and initial crew establishing a base there. We could watch the Martian crew harvesting water, producing propellant, growing food, and producing metals to lower the cost of accessing Mars for all follow-on missions.

Space settlement, even starting at this humble level, is of great historic importance and will be of great interest to the public.

## INSPIRATION

**Why Have a Space Program?**

Is it the purpose of a national space program to "excite" the public?

Adjusted for inflation, in today's dollars, the Apollo program averaged about $34 billion a year. NASA's average space budget (again in today's dollars) since the end of the space program has been about $25 billion a year. So, we have about an average of 74% of the Apollo Program's annual average budget.

Year after year after year, the public's elected representatives choose to fund our space program at about $20B per year +/-. Through our representatives, we choose to have a space program about as large as that of the rest of the world combined. Through our federal budget, we have chosen to spend a modest amount (about 0.4% of the federal budget) on space. Why?

Public surveys indicate that NASA is the most popular of federal agencies. But it is correct to state that the support for the space program is "a mile wide and an inch deep". Both the public and our elected representatives broadly like the space program even if we don't necessarily understand it very well. The space program often survives the cutting board fairly well and it enjoys bipartisan support (a rare quality nowadays). Our representatives would be loathed to end America's space program believing that a great country deserves a great space program.

So, the public, through their representatives, have consistently maintained a decent-sized space program. This is a reflection that the American taxpayer wants to spend a modest amount of our money on space. And why not? We are a democracy and we have the right to spend our money as we choose. But there is an important question. How much value are we getting for our space budget?

**Past Space Inspiration**

The Apollo program not only successfully achieved the goal of beating the Soviets to the Moon, it inspired generations. It is documented that the pursuit of science at all levels of education increased significantly during this time period. It became common to say, "If we are able to land a man on the Moon, then why can't we _____". The Apollo program gave our nation a sense of confidence and the rest of the world viewed the United States as being very competent and hence the leading country in the world. To this very day we take pride in having placed a man on the Moon.

**Inspiration Currently Limited**

Ask a typical American to state the name of any American in space now and what they are doing. In general, the public barely knowns that we have an International Space Station and very few know the name of any astronaut on it nor what they are doing. Do you, the reader, even know who is on the ISS now? Is this the best that we can get for a budget three-quarters the size of the Apollo program (adjusted for inflation)?

The Innovative Plan for Space Development proposes a direction for America's space program that wouldn't require any substantial increase in NASA's budget but would deliver a series of accomplishments of historic significance and incredible inspiration not only to our own public but to the rest of the world. We can be far ahead in space leadership if only we choose.

Unfortunately, the Traditional Plan fails in the four principles upon which the Innovative Plan is based. (See page 12.) Although crew return to the Moon seems to be back on the table, the plan for NASA seems to be expensive, and delayed going through a Gateway in lunar orbit, starting with uncrewed landers, and with no clear plan for how crew will go to the Moon in a large-scale, sustainable manner. Meanwhile, a real journey to Mars has to wait for funding to be freed up. It seems unlikely that the current Administration will accomplish only limited achievements in space if they make no significant changes to the current plan. But consider the public impact if this proposed Innovative Plan were pursued.

**Lunar Inspiration**

It could start with an announcement of the commitment to the full utilization of the reusable heavy lift fleet and all that that entails. The Artemis Accords could be followed on with a new coordinating plan for the International Lunar Exploration and Base phase. This would be realized in the early 2030s, but the participating countries need to start working now to develop the competing surface systems needed.

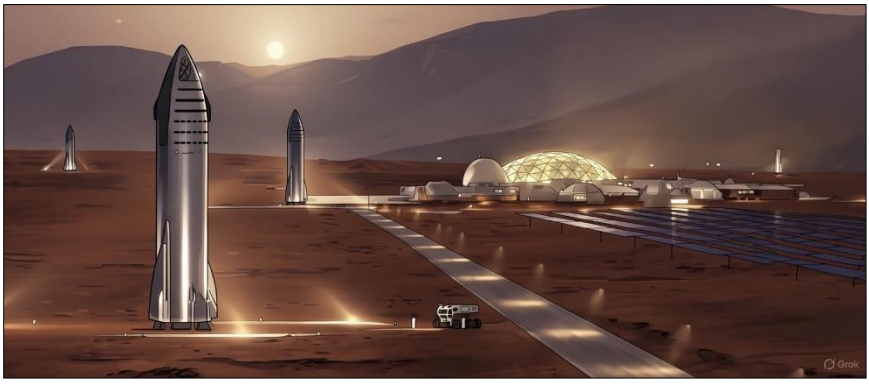
The scenario for the Initial Permanent Crew needs to be articulated and the criteria for who can compete to be part of the Initial Permanent Crew should be set so that young people around the world can start learning and preparing themselves to compete for those slots.

Then, as crew land on the Moon for Artemis 3, it would now be part of a much larger context in which it is understood that this is part of the first steps towards a permanent (even private) foothold for humanity beyond Earth and an American-led, international exploration phase and large and growing base.

The result would be that American taxpayers would see that their space program was about to achieve revolutionary accomplishments and that much of the rest of the world is wanting to follow our lead. They would read ongoing news reports of not just another research project on the ISS but historic steps with people setting the foundation for humanity's spread beyond Earth.

## MARS

Meanwhile, NASA needs to enter into formal dialogue with SpaceX for a joint program to send humans to the Red Planet. That could / should include a Mars flyby (or **Ph**obos-**D**eimos) mission to forever resolve the question of which country "went" to Mars first and how many astronauts from NASA and partner countries and how many SpaceX employees would be among the first humans to set foot on Mars.




*Mars base. Credit: SpaceX*