



# A NEW APOLLO LEVEL SPACE AGE

BY BRUCE CORDELL

Neil Armstrong and Buzz Aldrin's spacesuits from the 1969 Apollo 11 mission. A crew of four descends to the lunar surface in a spacecraft designed to utilize oxygen produced on the Moon for propellant. Because of the high performance advantages of in situ propellants, the spacecraft does not need to rendezvous with a second spacecraft in lunar orbit.

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## Introduction

One of the great mysteries of the space age is why no one has visited the Moon in 40 years, or even ventured beyond Earth orbit. Some suggest it's because the world is afflicted by economic uncertainty, global disasters and international terrorism. If so, how likely is it that President John F. Kennedy's 50 year-old vision of human expansion into space will rise again, in a few years, to dominate global headlines?

The "Maslow Window" model provides an empirical, long-term, global approach to a new understanding of how interest in space exploration and other macro-engineering projects ebb and flow. And it suggests that a near-term, JFK-style decade of interest and passion in space is likely.

Measureable trends over the last 200+ years—in the economy, technology and geopolitics—point to the decade between 2015 and 2025 as likely to feature a major economic and exploration boom like the 1960s, accompanied by a Camelot-style zeitgeist. A renaissance like this is called a Maslow Window. Abraham Maslow (1908-1970) was an American psychologist who studied human performance and originated Maslow's hierarchy of needs, which states that people seek to cover basic physiological and safety-focused needs, followed by love/belonging and esteem needs, to ultimately reach self-realization—when they are able to focus on other things and their worldviews expand exponentially. Indeed, Maslow Windows explain our national romance with the Apollo Moon program in the 1960s, and society's waning interest in it in the 1970s. They also illuminate the probable timing and key drivers of events in our future with major implications for business, technology and education.



On May 25, 1961, Kennedy announced his support for the Apollo program as part of a special address to a joint session of Congress:

## Pulsed Progress Over Two Centuries

Over the last 200 years, major events in human exploration (e.g., Lewis and Clark), massive state-of-the-art macro-engineering projects (e.g., Panama Canal) and exceptionally destructive wars (e.g., World War I) have clustered together, especially near times of major, twice-per-century economic booms.

For example, the most recent Maslow Window featured Apollo, considered by many to be the greatest exploratory and technological event in the history of the world. It began as a product of Cold War rivalries but was really made possible by the greatest economic boom up to that time.

As MacKenzie and Weisbrot wrote in 2009, "With wealth never before imagined, Americans could dream dreams never before possible... national optimism reached epidemic levels." However, as is typical for Maslow Windows, this ebullient feeling was cut short by the stress of a major war (Vietnam).

How important was the JFK boom to the Apollo program, both financially and politically? Could President Kennedy have successfully kicked off the Apollo program at any time other than the early 1960s? Could he have successfully motivated a large space program in the 1980s?

The historical experiment has already been done—by President Ronald Reagan, starting in 1984. Not even the Great Communicator himself, arguably as charismatic as JFK, could make the space station program happen during the decade after he proposed it. Indeed, in 1993, the U.S. House of Representatives came within one vote of cancelling the program. It was only after President Bill Clinton internationalized the space station that it became more politically viable, although not at Apollo levels.

The early 20th century Maslow Window (~1901-13) featured "pole mania" in the form of international races to claim discovery of the north and south poles, at the same time as the monumental construction of the Panama Canal ("Panama fever"). And including the Wright Brothers' first flights, the Great White Fleet's global voyage, the invention of the Model T and Theodore Roosevelt as president, this transformative decade was one of the most ebullient in U.S. history. But, as in the 1960s, the epidemic of national optimism was terminated by a major war (World War I).

The early 20th century Maslow Window was preceded by the financial Panic of 1893 and the great 1890s recession. It lasted six years and was a "double-dip" that has parallels with the panic of 2008 and our slow recovery. Increasingly, economists compare today's economic and political situation with the 1890s, rather than with the Great Depression. The 1890s recession led to a recovery and boom that averaged 5 percent annual growth in the early 1900s. Assuming current policy-makers are as smart and/or as lucky as those of the 1890s, this historical pattern points to the ignition of the next Maslow Window by mid-decade.

## Economic Booms are the Triggers

Macroeconomic data and global trends link great explorations, the largest macro-engineering projects and even major wars with JFK-style economic booms over the last 200 years. A JFK-style boom provides resources for large engineering projects and human explorations, and creates a more exuberant population required for political support. As the prosperity spreads through society, many people become hopeful and enthusiastic and ascend the Maslow hierarchy. Their expanded worldviews make great explorations and macro-engineering projects seem not only intriguing, but almost irresistible. The ebullience is momentary, but typically very strong; Walter Cronkite's prediction that after Apollo 11, "everything else that has happened in our time is going to be an asterisk" is an example.

A fundamental reason we haven't returned to the Moon in 40 years is because there hasn't been a JFK-style economic boom spreading prosperity to all segments of society since the 1960s. But the long- and short-term indicators show the next one should arrive by mid-decade.

Another way to think of a Maslow Window is as a self-organized "critical state," like that of financial markets, earthquakes and even wars, where a small change in the system may have a large, unpredictable effect. This explains why both "good" things (e.g., Apollo program, Peace Corps) and "bad" things (e.g., Cuban Missile Crisis, Vietnam War) seemed to happen rapid-fire during the 1960s' Apollo Maslow Window without much warning.



Photographed from the space shuttle Atlantis as the orbiting complex and the shuttle performed their relative separation in the early hours of July 19, 2011.

## Forecasting the New International Space Age

Maslow Windows are fundamentally driven by human nature and the basic laws of economics. Over the last two centuries, they have successfully operated through the greatest disasters such as the Civil War, the Panics/ Great Recessions of 1837 and 1893, the Great Depression, and two world wars. The likelihood of a technology and exploration boom by mid-decade is supported by centuries of historical data. Legitimate concerns like the financial panic of 2008, the recent recession, weak recovery and declining education standards, are not evidence of America's imminent

collapse. Instead, they may signal the approach of the next Maslow Window. Historical analogs indicate that—during times similar to today—the widespread drive for prosperity results in a political realignment that triggers a new economic boom. With this possibility before us, it's important to remember that despite how things may look today, almost anything can happen tomorrow.

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## The basic lessons of the last 200+ years for great exploration and technology programs are clear:

- **Expect the Window to Open near 2015:** Maslow Windows seem to open unexpectedly because of pre-Maslow financial panics and great recessions. It's better to be ready to move quickly, like JFK when a decision about the Moon needed to be made. Our 21st century "Sputnik Moment" may be only a couple of years away.
- **Expect the Window to Close by 2025:** Maslow Windows are brief and vital critical states where almost anything can happen without much warning. Once the great boom begins it's always hard to imagine that

it will end. But it will, rapidly, usually in response to a war. If Vietnam had intensified in 1965 instead of 1968, we might have lost all of the Moon landings instead of only the last three.

- **Achieve Self-Sufficiency in Deep Space:** To avoid another 40 years trapped in Earth orbit, it's important to establish human bases on the Moon and/or near Mars that can operate without frequent re-supply from Earth. This should be a high priority during the new international Space Age because of the window's likely short lifetime.