
How do Great Ideas Evolve?

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Sun, Nov 7, 2021 at 1:06 PM

“The day before something is a breakthrough, it’s a crazy idea.”

I truly believe this and it’s one of Peter’s Laws, but how do we know that it’s true?

It turns out that there’s a predictable process for the evolution of great and breakthrough ideas. Ideas that are *revolutionary*.

I learned about this process from Sir Arthur C. Clarke, inventor of the geostationary communication satellite and author of dozens of best-selling science-fiction books, including *2001: A Space Odyssey*.

In the 1980’s and 1990’s I had the great honor to know Arthur C. Clarke, he was “Uncle Arthur” to me, Bob Richards, and Todd Hawley: the three co-Founders of International Space University.

Clarke described three phases of a great idea:

1. In the beginning, people will tell you that the idea is “crazy”—that it will never work.
2. Next, people will say: “Well, it might work but it’s not worth doing.”
3. Finally, they’ll say: “I told you that it was a great idea all along!”

In today’s blog, I’ll share a story that perfectly exemplifies this evolution: NASA project manager Tony Spear’s efforts to land an unmanned rover on Mars in the 1990s.

It’s a story about steadfast belief in a breakthrough idea and having the passion and persistence to pursue that idea—even in the face of risk and opposition from experts.

In short, it’s a story about entrepreneurship.

Let’s dive in...

NOTE: Developing a Moonshot Mindset and helping you turn your crazy ideas into Moonshots are key focuses of my [year-round Mastermind and Executive Program Abundance360](#).

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PHASE 1: BIRTH OF A “CRAZY” IDEA

When Tony Spear was given the job of landing an unmanned rover on the Martian surface, he had no idea that Clarke’s three stages would be precisely his experience.

A jovial, white-haired cross between Albert Einstein and Archie Bunker, Spear started his career at NASA's Jet Propulsion Laboratory (JPL) in 1962.

Over the next four decades, he worked on Missions from Mariner to Viking, but it was his final assignment, as project manager for the Mars Pathfinder, that he describes as his "greatest mission challenge ever."

The year was 1997, and the United States had not landed a probe on Mars since July 1976. That was Viking, a complex and expensive mission, costing some *\$3.5 billion* (in 1997 dollars).

Spear's assignment was to find a way to do everything that the previous mission had done, just *faster, better, and cheaper*.

And when I say cheaper, I mean a whole lot cheaper: *fifteen times cheaper* to be exact, for a fixed and total development cost of only \$150 million.

That meant all the expensive, traditional, and proven stuff was out the window—including the types of retrorockets for landing that worked on the Viking Mission.

To pull this off under these seemingly impossible constraints, Spear and his team had to do everything differently: from how he managed the mission to how they landed.

As Spear recounts the story of those early days, "That really scared people. At NASA headquarters, I was assigned six different managers in rapid sequence—each of the first five found a different excuse to quit from the project. Finally, I was assigned someone about to retire who didn't mind sticking with me at the end of his career. Even the NASA administrator, Daniel Goldin, nearly flipped out when he received his initial mission briefing—he couldn't get past *how many new things* we were trying out."

PHASE 2: "WELL, IT MIGHT WORK BUT IT'S NOT WORTH DOING"

Among the many things Spear tried out, nothing struck people as zanier than using airbags to cushion the initial impact, helping the craft bounce around like a beach ball on the Martian surface, before settling down into a safe landing spot.

But airbags were cheap, they wouldn't contaminate their landing site with foreign chemicals, and Spear was certain that they would work.

The early tests, however, were a disaster, so the experts were summoned. The experts had a pair of opinions.

The first was: "*Don't use airbags.*"

The second was: "*No, we're totally serious, don't even consider using air bags.*"

"Two of them," recounts Spear, "told me flat out that I was wasting government money and should cancel the project. Finally, when they realized I wasn't going to give up, they decided to dig in and help me."

PHASE 3: "I TOLD YOU IT WAS A GREAT IDEA ALL ALONG!"

Together they tested more than a dozen designs, skidding them along a faux rocky Martian surface to see which would survive without shredding to pieces.

Finally, just eight months prior to launch, Spear and his team completed qualification testing of a design composed of twenty-four interconnected spheres, loaded it aboard the Pathfinder Mission, and launched it into space.

But the anxiety didn't end there.

The trip to Mars took eight months, during which there was plenty of time to worry about the fate of the mission.

Spear recalls:

“In the weeks just prior to landing, everyone was very nervous, speculating whether we'd have a big splat when we arrived. Goldin himself was wondering what to do: *Should he come to the JPL control room for the landing or not?* Just a few days before our July 4th descent to the surface, the administrator took a bold tack, holding a press conference and proclaiming, ‘The Pathfinder Mission demonstrates a new way of doing business at NASA, and is a success whether or not we survive the landing.’”

The landing went *exactly* as planned.

They had spent one-fifteenth the cost of the Viking Mission, and everything worked perfectly—*especially* the airbags.

Spear was a hero.

Goldin was so impressed that he insisted airbags be used to land the next few Mars missions and was quoted as saying, “Tony Spear was a legendary project manager at JPL and helped make Mars Pathfinder the riveting success that it was.”

FINAL THOUGHTS

Arthur C. Clarke was a close friend and a mentor of mine.

And he was right: demonstrating great ideas involves a considerable amount of risk.

There will *always* be naysayers.

People will resist breakthrough ideas until the moment they're accepted as the new norm.

Every breakthrough idea I've worked on, from the International Space University (ISU) to the \$10M Ansari XPRIZE, has gone through these three phases where people ridiculed us and stood by the sidelines, only to eventually celebrate the successes.

Since the road to abundance requires significant innovation (and revolution), it also requires significant tolerance for risk and failure, and a tolerance for ideas that strike most people as absolute nonsense.

My dear friend Burt Rutan, who designed and built SpaceShipOne, the brilliant vehicle that won the \$10 million Ansari XPRIZE, put it best:

“Revolutionary ideas come from nonsense. If an idea is truly a breakthrough, then the day before it was discovered, it must have been considered crazy or nonsense or both—otherwise it wouldn’t be a breakthrough.”

What crazy ideas and Moonshots are *you* pursuing?

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