

THINK LIKE A ROCKET SCIENTIST

**Simple Strategies You Can Use to
Make Giant Leaps in Work and Life**

OZAN VAROL

OZAN VAROL moved to the United States from Turkey at age 17 to attend Cornell University and study astrophysics. He served on the operations team for the 2003 Mars Exploration Rovers projects which successfully sent two rovers to Mars. He then went to the University of Iowa law school, graduated first in his class, and became a law professor at Lewis & Clark Law School. He is a popular keynote speaker, the author of numerous award-winning articles, and his work has been featured in the *Wall Street Journal*, *Newsweek*, *Time*, and the *Washington Post*.

The website for this book is at: www.rocketsciencebook.com.

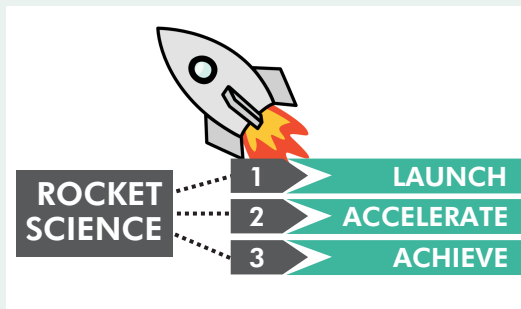
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MAIN IDEA

When President John F. Kennedy pledged in 1962 that America would land a man on the Moon and return him safely to the Earth, he noted that achieving this would require a rocket "made of new alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, sent on an untried mission, to an unknown celestial body".

In other words, to meet the national goal, the country was relying on rocket scientists to figure out how to get the job done. And notably, the 1960s were an era where computers had only just been invented, and had not yet moved from the lab to the desktop.

So how did they achieve that? The race to the moon generated a new set of nine main principles which would later be termed "critical thinking skills" which the rocket scientists used to pull off what seemed impossible. Just like a rocket, these principles can be batched into three stages:



"To think like a rocket scientist is to look at the world through a different lens. Rocket scientists imagine the unimaginable and solve the unsolvable. They transform failures into triumphs and constraints into advantages. They view mishaps as solvable puzzles rather than insurmountable roadblocks. They know that the rules aren't set in stone, the default can be altered, and a new path can be forged."

– Ozan Varol

HOW TO THINK LIKE A ROCKET SCIENTIST



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|---|----------------------------------|
| 1 | BE COMFORTABLE WITH UNCERTAINTY |
| 2 | REASON FROM FIRST PRINCIPLES |
| 3 | USE THOUGHT EXPERIMENTS |
| 4 | FIND MOONSHOTS – RADICAL IDEAS |
| 5 | REFRAME YOUR QUESTIONS |
| 6 | FLIP-FLOP TO SMARTER DECISIONS |
| 7 | TEST AS YOU FLY, FLY AS YOU TEST |
| 8 | NOTHING SUCCEEDS LIKE FAILURE |
| 9 | NOTHING FAILS LIKE SUCCESS |

1st stage – Launch – Principles 1 - 4 Pages 2 - 4

To think like a rocket scientist, you first have to ignite your thinking. This will be a matter of using uncertainty to your advantage, and having the discipline to always reason from first principles. You also need to avoid the status quo's invisible rules which constrain your thinking, and look for the elegance that comes from subtracting rather than adding all the time. Rocket scientists, businesses, and world-class performers have always used thought experiments and moonshot thinking to come up with original ideas, and you should too.

2nd stage – Accelerate – Principles 5 - 7 Pages 5 - 6

Once you've generated some original ideas in the first stage, you then need to propel your ideas forward and see which can stand on their own two feet. The best way to do that is by reframing your questions to open up more possibilities, and by testing and experimenting like a rocket scientist. Astronauts train for years to be able to respond immediately to worst case scenarios, and you should take that as a clue for your own success.

3rd stage – Achieve – Principles 8 - 9 Pages 7 - 8

The third and final stage involves learning that unlocking your full potential is always a mix of successes and failures. The world might be in love with the "Fail fast, fail often" mantra but don't forget the aim is to figure out what works, and then to take full advantage of that. Top performers know uninterrupted success is a warning sign and respond appropriately.

