


One of two possibilities

 By [Peter Horszowski](#), issued by [Pert Industrials](#)

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I am standing in the splendid hall of the Smithsonian Museum in Washington. The guide points at the Wright Brothers' Kittyhawk plane hanging from the ceiling. "That is from 1903." He gestures towards the Apollo 11 Lunar Landing Module against the opposite wall. "1969," he says. "In less than the lifespan of an average man, we went from a few metres of flight to putting a man on the moon."

That was my first scientific "woah", and I encourage you, reader, to stop and reflect on it for just a moment now. Think about what can be accomplished in just 66 years. Woah! But be warned, physics promises an "anti-woah" for every "woah".

Several years later, I came across another reference to this astonishing achievement in a description of Bernoulli's principle at work on the shape of a wing. As the curved shape moves through a fluid medium (in this case air) there's faster flow over the top, which means more pressure at the bottom, and hence lift. As soon as we understood this basic principle of flight, proclaimed the excited author, this tiny piece of knowledge enabled us to progress from nothing to space travel within decades. Which is incredibly inspiring and exciting. But not quite true.

You may have seen this video from my previous article:

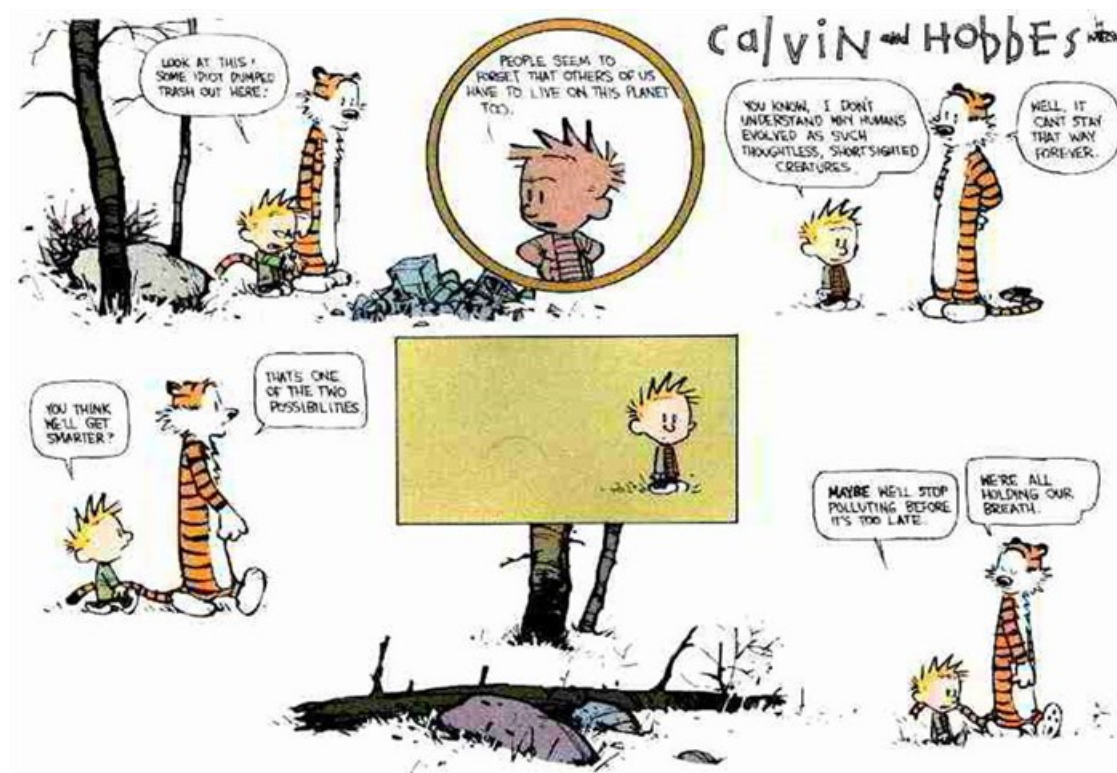
If you look carefully, you will see the +/-ve on the motor, which means you can just snap it round so the blade spins in the opposite direction. But that way it will never fly. Why not? It is the same airflow over the top and bottom, isn't it? And what of those little flat-wing fighter jets? And planes that fly upside down? Shouldn't they just drop out the sky the moment the wing curve swops round?

The truth is that in many flight configurations, Bernoulli's principle plays just a small contributory factor. The main lift is generated by Newton's third law: action and reaction. Woah and anti-woah? No. That is not what I was referring to. Myself and a fellow human confused on a matter of science is hardly remarkable. It happens all the time. My anti-woah is more about perspective. Did you know that the original *Blade Runner* is set in 2019 and *Back to the Future* day was four years ago. Where are the flying taxis, the interstellar shuttles, the hoverboards? (Don't forget that Kubrick had us living in space in 2001). And so my slow anti-woah. That we could go from a few metres of flight to a moon landing in six decades, and

then, well, nowhere else in the next five. In fact, we couldn't get to the moon now if we wanted to.

Which brings me to my point: don't bank on an engineering solution to any large-scale human problem. Technology doesn't work like that. There are commercial forces, psychological forces, political forces, maybe even spiritual forces at work. And professional scientists and engineers will always tell you that there is a heck of a lot of chance and luck involved. It is extremely hard to engineer big solutions. It is so much easier to engineer big problems, like climate change and species devastation: <https://www.theguardian.com/environment/2014/sep/29/earth-lost-50-wildlife-in-40-years-wwf>.

I write from Cape Town, where we are dealing with the worst drought on record. And that is nothing compared to the wildfires currently ravaging California. In response, many bright new congressmen and women in the US are proposing a 100% Green Future. The conservative press calls this silly, naïve and idealistic. Is it? I'd say a green future is the only future possible. The alternative is no future, as Hobbes pointed out to us several decades ago. So much can be achieved in a few decades. Or not. Which way shall we go? (If you are interested in our new Renewable Energy high school kits or our RE engineering apparatus, or if you would just like to talk about our environmental responsibility, please mail me: peter@pert.co.za.)



ABOUT PETER HORSZOWSKI

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