

Re: top ten reasons there'll be faster progress

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- *From:* Joe Strout <joe@xxxxxxxxxxx>
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In article <1151297466@xxxxxxxxxxx>, throopw@xxxxxxxxxxx (Wayne Throop) wrote:

I'm obviously assuming here that progress in the next 30 years will be substantially faster than in the last 30 -- but there are lots of good reasons for thinking that may be the case.

What are a few of these reasons?

Well, for starters, this is almost always the nature of technological progress. Check out any of Kurzweil's work, for example [1]; he has plotted quantitative progress over time on a wide variety of technologies, and finds an exponential curve again and again. The illusion of linear progress is a result of the fact that, on the very short timescale at which our attention generally operates, an exponential curve is approximately linear. But that approximation quickly breaks down at longer time scales.

Next, let's consider all the things that were being done wrong for the last 30 years, which are finally starting to change:

– Space was developed as a massively wasteful government program; without any tangible benefits, such programs are politically unsustainable, leading to the stagnation we have seen. Now, we are seeing substantial progress being made on a commercial basis (e.g. Zero Gravity, Virgin Galactic, SpaceX), and this is far more likely to be self-sustaining, leading to progress.

– Once the cold war rivalry as justification for space development evaporated, the space community seized on science as its *raison d'être*. This was a mistake; space science is almost entirely pure research, and there isn't much money in that (in the short term anyway); moreover, similar amounts of pure research could be done on the ground for far less money, making every space project a political battle. Now space is being developed for more mundane but far more profitable purposes, like space tourism. The only politics involved here is in regulation, and that seems to be going reasonably well so far.

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– Flight rate. So far, about 500 humans have ever been in space. Virgin Galactic plans to fly about 500 passengers per year. Manned space launches currently happen at a rate of about half a dozen (launches, not people) per year; Virgin will be flying more than once per week. And of course, VG will not be the only game in town; Space Adventures also seems pretty credible to me in their plans for suborbital tourism. So in a few years, we're looking at a flight rate orders of magnitude higher than what we have now. Even if this is suborbital rather than orbital, this will result in a much faster feedback & revision cycle, and so faster progress.

– Advances in related technologies. Electronics, GPS, avionics, and other technologies are now available in forms that were science fiction 30 years ago. They're not only dramatically more capable, but dramatically cheaper, too. These make up a substantial fraction of the cost of a spacecraft, even if not the weight, and advances in these should drive the overall cost down too.

Anybody want to add to this list?

Best,
– Joe

[1] <http://www.kurzweilai.net/articles/art0134.html?printable=1>