Twitter Thread by Thomas A. Fine ■■



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Let's talk about Avi Loeb and his theory about alien

First, I should disclose that I work at the fame research facility as Dr. Loeb, though I work in a different department and to my recollection we've never met.

He's a scientist; I'm in computer support.

With that out of the way...
The interview above is worth a read, and a lot of serious thought, because there's an idea there that's really critical to science, and it isn't whether or not aliens have visited (exactly).

It's about how fashion and culture and taboo have an unfortunately strong effect on science.

In particular he compares his theory on alien visitation with the multiverse theory.

Which of these is more deserving of ridicule?

Science is fundamentally a structure for forming hypotheses and then (critically) testing these hypotheses to see if they should be kept, rejected, or modified.

And so a big part of his point is that we just discovered an object passing through our galaxy that is truly bizarre compared to any other known objects we've ever seen.

So bizarre that there's no really good theory for what it might be. Except maybe for Dr. Loeb's theory.

He's postulated that it could be a cast-off solar sail from an alien probe. On a simple matter of facts, it's a great fit. It explains the bizarre shifts in brightness, and it explains the bizarre acceleration as the object moved out of our galaxy.

But as I said and as he says in the article, science is all about testability. This is an object. It exists. We have seen it. We can look for more objects.

The hypotheses we form can and should help guide us in how we look.

So if we think it might have been an alien solar sail, versus a long skinny low mass comet with an invisible jet mechanism, these hypotheses point to different things we can look for.

So why not just say we should look for more? Why be like "Aliens!"? Because it affects how we look, not just whether we look.

And because "Aliens!" is based on observable phenomena: us.

It's a fascinating point that is easy to overlook. The "Aliens" theory has at it's core a phenomenon known to exist already: lifeforms that can launch probes through space. Because we know we exist.

The competing theories are all about phenomena with NO prior observations.

So just on that, "Aliens!" ought to be the leading theory here because it's the only theory that matches any known previously observed phenomenon. And yes, there's some spin in this viewpoint, but it's worth consideration.

He also talks about it relative to other popular theories like the multiverse theory.

Why is it unsafe to talk about "Aliens!" but safe to talk about the "multiverse"?

The multiverse theory is popular these days because it has invaded our culture in seemingly every sci-fi show in existence, and from there, it has turned into a sort of de facto background "fact" in our culture.

Yet the notion has always (to me) been utterly absurd.

As shown in popular culture, multiverse are just a way for writers to explore "what if?". Generally, what if some character had different life experiences.

But this isn't the scientific theory of the multiverse at all.

In the science viewpoint, every possible quantum state of every particle in existence, does exist in some alternate universe.

But under this theory, there'd be an infinite number of "adjacent" universes spinning off of that one single particle at the tip of my pinky toe.

And another infinity of universes for every other particle in the universe.

In such a multiverse system, the "nearest" (by measure of similarity) million, trillion... heck the nearest googol of alternate universes would be utterly identical to ours.

That is, the single particle state differences that differentiated those universes from this one are most likely not even in our observable universe.

In some of these shows (e.g. D.C. Comics, though they're not the only ones) they start to number the Earths to keep track, so there's like earth 32 and earth 18 or whatever.

But in reality Earth 909981329871928370192837401897234871239710857038571023487109284701928370328701982347019832701873 2 would be identical to our Earth down to the last measurable particle.

To misquote "Contact", that seems like an awful waste of spacetime.

And really, an utterly pointless one.

So unlike the alien probe theory, we have absolutely no way to test the multiverse hypothesis. It's a mathematical castle in the sky (which probably all spins from a misunderstanding of Schroedinger's thought experiment).

So if the multiverse isn't really science at all, but just some sort of mathematical fancy, or better yet fiction, why is it that we act like the multiverse is science and that the possibility of aliens is not science?

In other words, Professor Loeb is mocked for bringing up the possibility of an organic life form developing technology, even though we KNOW that happens, yet countless scientists talk about the multiverse almost as a given, though we've never seen an alternate universe.

This disparity is not science. It is simply what is in fashion and what is not.

I should probably mention that I did a speculative thread about Oumuamua almost a year ago. It's worth mentioning in this context because I was in fact talking about a testable hypothesis related to Oumuamua.

https://t.co/XiHA9cRwjR

> So THAT'S why we never saw Oumuamua leaving the solar system. https://t.co/pSlwmRMctU
>
> — Thomas A. Fine \U0001f1fa\U0001f1f8 (@thomasafine) February 27, 2020

In particular, this tweet from that thread is about the testable hypothesis (though I didn't express it that way):

https://t.co/hj1ytCbFDH

> But the thought that's been running around in the back of my mind for the last two years is... if all of a sudden something shows up in orbit around the Earth, I'd be very suspicious of that something.
>
> — Thomas A. Fine \U0001f1fa\U0001f1f8 (@thomasafine) February 27, 2020

In other words, I had this hypothesis that I got from Dr. Loeb, and created a test in my head without even thinking of it that way.

The test was, if a small object showed up in orbit around Earth in the next couple of years after Oumuamua we should be extra suspicious of it.

And one did.