Review of: "Theory of Innovation Failure and Application in Aerospace Missions"

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This is an interesting paper and very relevant topic for the scientific and engineering community. To some extent it is in acceptable form as a complete paper, although it did not end up covering an element that I expected when I began reading it. The introductory elements of the paper seem to imply that it is largely geared toward organizations taking on the development of new technologies and the prospect those technologies either might fail to come to a fruition (e.g., due to a limit in fundamental physics such as requiring a particle to move faster than the speed of light) or might fail to show enough utility to sustain further development activities. In many cases, such failures are perceived as just that - failures - when (as suggested in the article) failure in such a circumstance should really be based on the failure to learn from the endeavor rather than failure to achieve some specific performance or utility goal. While the examples provided are related, they cover a somewhat different slant, i.e, was the failure related to insufficient understanding of how much engineering is required of a massive complex system (relative to the resources available to produce it) vs my earlier example about fundamental limitations in the technology or the prospect of making a product that has broad utility (I consider these latter examples as being “innovation” failure while the examples in the paper are not so much about innovation but rather about failure to either capture the necessary assumptions or adhere to them when fielding a highly complex system). Of course both of these situations have similar implications when it comes to failure, but the former (those included in the paper) are a lot less tied to innovation than they are risk-taking for complex engineering feats, while the latter are more in the category of trying something brand new for the purposes of big payoff with little foresight into whether it would be successful, or in many cases what success would actually look like.

With all that said, I recommend a third example that centers around the attempt to develop a new technology that results in some definition of failure, but how learning from that failure helped to spur innovation rather than stifle it.