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Is Space R&D Truly Fostering A Better World For Our Future? (2)

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SCIENTIFIC ADVANCEMENTS AND SPACE EXPLORATION, UNCERTAINTIES AND  
UNKNOWN AS A DRIVING FORCE?

**Abstract**

Developments in technology are the prerequisite for the exploration of space. While new techniques enable new space missions, those missions provide the scientific community with data to further develop scientific theories and hypotheses.. The cooperation between the space sector and the scientific community, can profit in an optimal way only if an open and well organized and functioning network is present. What drives the constant input of the scientific community to the space sector? How does the feedback of space mission data feed curiosity within the scientific community? One of the driving forces between the two communities is the curiosity about the uncertainties or unknowns of our universe. Hence the wish and need to know everything, and create a theory of everything (TOE), drives scientists to collect more data to understand the major processes within the universe. One of the most important ways to collect new data are spacecraft missions. However, new data often raises more questions than it will provide answers. This dilemma could be an important driving factor to reduce uncertainties. Denying the uncertainties will result in stagnation of further research. The uncertainty/unknown in science is fundamentally different from an engineer's viewpoint about uncertainties as engineers critically have to assess the chance of failure and all kinds of risks. Is this different perspective of uncertainties one of the major factors that prevent perfect cooperation between the two communities? This paper focuses on the connection between space exploration and the scientific community by studying the fundamental basics of uncertainties and unknowns that can provide progress in both the science and space exploration community. Accepting and understanding this difference in both communities is. critical to develop joint efforts dealing with uncertainties to finally improve efficiency of future space exploration. Please note that the present abstract is submitted under the Space Generation Advisory Council's auspices as part of the Space Exploration Project Group's research.