



Encouraging the Space-for-Space Economy

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It may seem puzzling that so many are making so much of the changes in the space sector over the last two decades. After all, the vast majority of activity in space today is driven by the same sources of demand which have driven it since its early days: science, national security, and satellite-based services for terrestrial customers. While the players have changed, with Blue Origin, Virgin Galactic, and especially SpaceX grabbing headlines and market share that were once reserved for established space contractors, most of the money in space still comes from NASA, the Department of Defense, their non-U.S. counterparts, or companies whose businesses require satellites. Skeptics can be forgiven if they doubt that the rise of so-called “new space” or “commercial space” will turn out to be more than a reshuffling of an industry.

Most problematic for space enthusiasts is that they have struggled to convincingly demonstrate a business case for their expansive visions of a new space industry. Put simply: it is unclear what demand the space industry is supplying. Of course, we are seeing a dramatic reshaping of the satellite sector and an expansion of what services it provides, and that growth will drive demand for launch services, satellite servicing, and even debris management. But a thriving satellite sector, no matter how important on Earth, falls far short of the self-sufficient space settlements and routine space travel forecast in the 1970s and animating the dreams of both billionaire investors and millions of space optimists today.

Despite these reasons for skepticism, the reality is that the space sector has changed in important ways over the past two decades. Beginning in the mid-2000s, the crisis of the Shuttle program’s imminent cancellation pushed NASA to experiment with a new way of contracting with its providers. Most important, NASA went from issuing custom orders for which it paid a margin over costs to trying to be “one customer among many”, paying a fixed price for a capability that could be repurposed by commercial providers who (newly) retained ownership over the equipment and intellectual property embodied in it. With this seemingly small change, launched through the Commercial Orbital Transportation Services (COTS) program, NASA unleashed a torrent of innovation by companies seeking to build a piece of a space industry serving private as well as public demand. Fortuitously, at the same time a few space enthusiasts—Jeff Bezos and Elon Musk, most importantly—amassed and put to use both vast personal fortunes and access to return-hungry capital markets to fund bold startups aimed at lowering launch costs, the gateway to a revolution in the sector. A host of other startups were founded to build out the ecosystem, from Made In Space for manufacturing to, Nanoracks for scientific and commercial experiments, Planetary Resources for space resource mining, Bigelow for habitats, and Astroscale for space debris, and many more. Some of these failed, as in any new sector, but the acceleration of activity has been unmistakable.

Most important, in 2020 we reached a crucial tipping point beyond which—if we successfully push—the promise of a more expansive space economy will be realized. As I wrote with my colleague Mehak Sarang in a recent article in Harvard Business Review, “On May 30th [2020], for the first time in human history, humans accessed space via a vehicle built and owned not by any government, but by a private corporation with its sights set on affordable space settlement. The implications — for business, policy, and society at large — are hard to overstate.” Why? Because the grand visions for space which have animated space enthusiasts for decades depend on one crucial ingredient: large numbers of people going to and staying in space. An economy, after all, is simply the interaction of people who produce for and trade with each other, so it is no mystery that the “space economy” has remained almost exclusively a space-for-earth economy thus far. While NASA and its global partners have put as many as 13 people in space at one time, governments who serve terrestrial populations have little incentive to expand the population in space. Companies, on the other hand, serving customers’ demands for space tourism or in-space production (involving human hands) have every incentive to make it possible for large numbers of people to safely explore and stay in space. Having humans in space will mean demand for all the goods and services that make terrestrial economies thrive, solving at last the question of missing demand in space.

The implication for policy, if we hope to spur this space-for-space economy, is that public funding and regulation of space should prioritize the support of a commercially driven, expanding human

presence in space. Precisely what form that presence will take is best left up to the marketplace. But policymakers can provide a foundation for its success in at least three ways. First, by continuing the decentralization of the sector through contracts and funding that position the government as a customer, not the caretaker, of commercial space companies whose business models increasingly rely on private demand. Second, by providing seed funding and technical support to companies that try to fill crucial gaps in the space sector’s ecosystem, especially gaps of particular importance for sustaining humans in space, such as habitat technology. Third, by ensuring that regulation both encourages risk-taking, by people and the companies taking them to space, and preserves the legitimacy of the space sector’s efforts in the public domain by restraining its excesses and ensuring space’s sustainability.

In May 2021, just one year after SpaceX’s pivotal flight, we are eagerly anticipating the dawn of an era of space tourism and habitation, arguably the most important step in human space activities since 1969. Maintaining that momentum is our best hope to fulfill the visions of a thriving space economy which the last two decades’ changes have made possible.

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