

Lunar Landers and Space Elk: The Imaginary as Spaceflight Infrastructure

Joseph Popper

On Tuesday the 22 October 2019 in Washington DC, Jeff Bezos accepted an award for Excellence in Industry on behalf of his company, Blue Origin, at the [2019 International Astronautical Congress](#) (IAC). Bezos used the acceptance to announce his new project – a partnership of Blue Origin with Draper, Lockheed Martin and Northrup Grumman. Together, this self-styled “national team” are pitching to develop and build a lunar lander for the NASA Artemis mission that aims to return American astronauts to the Moon in 2024. In another plenary at the congress, Blue Origin CEO Bob Smith presented speculative imagery of floating space colonies, replete with megacities and natural parks, as a future destination for a thriving and spacefaring humankind. Here, two very different space futures are found projecting from the same conference centre, by the same spaceflight company.

The International Astronautical Congress is the world’s largest astronautics and space engineering conference, and in 2019 was held in Washington DC to mark the fiftieth anniversary of Apollo 11. Involving actors in science, industry, and culture, it arguably represents a microcosm of the space field. Jeff Bezos’ pitch for the next NASA moon shot is further indicative of the changing industrial landscape, where public-private

partnerships of state agencies and commercial companies are increasingly becoming normal. These partnerships also reflect the growing influence of NewSpace – the collective title for private spaceflight actors, industries and other public-facing societies that advocate the human colonising and commercialising of outer space. Along with Elon Musk, Bezos is a leading figure of a powerful social and economic movement, one that is shaping the physical infrastructures of outer space practices and also stabilising a grander vision of the human place in the universe.

Blue Origin has become a major firm in the spaceflight industry and, as primary sponsor to the congress, its ascendancy and ambition were on display in Washington. At the top of the steps on the way to the congress expo, Blue Moon stood proudly – a full scale model of the company’s first lunar lander prototype. However, a return to the Moon is but one step in a much grander mission. Bezos envisions himself and Blue Origin as the pioneers of a “multi-generational vision,” where his generation is building the “road to space” for the future benefit of humankind and the Earth. This is a future of millions of people living and working in space, with “thousands of future entrepreneurs building a real space industry” (Bezos 2019b). The Blue Moon lander and the road to space form different “material instantiations” (Messeri and Vertesi 2015: 56) that reveal the influential mechanisms of imagining futures at different scales. By analysing the material and representational space productions of Blue Origin in Washington, this essay explores the idea of the imaginary as infrastructure – an infrastructure that bridges the gap between futures near and far, and between real and ideal outer space.

I was there in the audience to hear Bezos and Smith speak. On stage, Bezos’ award acceptance was a highly choreographed performance. In a “fireside chat” with International

Jeff Bezos announces the “national team” at the 2019 International Astronautical Congress, Washington DC.
Credit: <https://www.blueorigin.com>.



Astronautical Federation chief, Pascale Ehrenfreund, he reflected upon his childhood inspiration by the Apollo programme, before espousing values of growth and dynamism, the need for long-term visions, and sharing his ambition to turn Earth into a natural park. He was flanked by enormous screens, playing a series of videos capturing the successful testing of multiple Blue Origin rockets. This cinematic imagery prefaced the closing pitch for the Artemis lander partnership, pointedly styled as a “national team for a national priority.” As Bezos received the award to a standing ovation, he completed a successful exercise in “projectory” choreography (Messeri and Vertesi 2015). The rhetoric, the videos and the Blue Moon lander together consolidate a near future vision, orienting the audience along a commercial roadmap to the Moon. For Bezos, the message is: this time, “we are going back to the Moon to stay” (Bezos 2019). Here is a future path grounded in, and stabilised by, publicly performed, documented, and streamable feats of technological prowess.

The Blue Origin lunar lander model “Blue Moon” stands in the foyer at the Walter E. Washington Convention Center for the 2019 International Astronautical Congress. Credit: <https://www.iac2019.org>.



Reflecting upon Bezos’ performance and my broader experience at the IAC, it helps to articulate the imaginary – a collectively held and publicly performed vision or narrative – as a powerful social, political, and economic force (Valentine 2012; Messeri and Vertesi 2015; Ormrod 2016; Geppert 2018). Sheila Jasanoff and Sang-Hyun Kim’s (2015: 4, 19) concept of the sociotechnical imaginary becomes central for framing the imaginary as infrastructure. The sociotechnical imaginary pairs performance with stabilisation, where fictions – bound to technological projects – organise societies around common visions of desirable futures. Such powers of organisation and mediation also apply to “narrative infrastructure,” a term introduced by Rob Coley (2018: 305) to describe how stories actively shape our perceptions of, and actions in, the world. Relating to events in Washington, James Ormrod (2016: 385) further complements this infrastructural sense by conveying the pro-spaceflight movement as “held together”

by the shared vision of a spacefaring civilisation. Here, Blue Origin materialises the road to space by launching and landing reliable, reusable rockets. Bezos champions reusability as crucial for lowering the price of entry to the space frontier and to allow more entrepreneurs, in his image, to operate off-planet. Bezos' infrastructural imaginary draws upon the story of his company Amazon, where the "heavy-lifting" of building the internet had already been accomplished by others – enabling a Silicon Valley start-up to grow into a global corporate monolith, and Bezos himself to become one of the richest people in the world.

Moving from the near to the far future, Bezos has promised that "we are going to build a road to space [...] and then amazing things will happen" (Blue Origin 2019a). According to the Blue Origin mission statement, these things are both "amazing" and "unimaginable" (Blue Origin 2019b). Nevertheless, in Washington, CEO Bob Smith



did present a series of speculative imagery, describing the kind of future the road could lead towards. The series heavily tropes, to the point of "pastiche" imitation (Scharmen 2019), the renderings of space settlements directed by physicist Gerard O'Neill in the 1970s. One notable image is foregrounded by an elk, standing high on a mountain ridge overlooking a natural park, where waterfalls cascade into a green, wooded valley. Behind the elk, a river runs to the horizon, passing grand cityscapes along its winding path into the distance. The scene is enveloped by a vast cylindrical

An artist's rendering of a space colony for Blue Origin, presented by Jeff Bezos and Bob Smith. Credit: <https://www.blueorigin.com>.

architecture, placing the landscape in the interior of an enormous artificial habitat. Outside, the whole Earth rises to frame a spectacular vision of a splendid space colony. To the plenary audience, Bob Smith wryly offered the space elk as “a thing we can actually have” (Smith 2019).

Despite the seemingly creative leap implied by the space elk, Blue Origin’s obvious troping of the O’Neill designs suggests a lack of, or limit to, the imaginations of NewSpace actors. The imagery is further reminiscent of particular, familiar future paths that large swathes of the space industry use to project their ambitions and justify their work in the present (Messeri and Vertesi 2015: 80). The artificial world of the space elk is also a future imagined very, very far away – exceeding the NewSpacers’ capacity to describe it in detail (Valentine 2012: 1058). Borrowing from sociologist Richard Tutton’s (2017: 5) writing on multiplanetary futures, the space colony presented by Smith is a vision evidently more “desirable” than “hopeful,” in that this future arguably has no substantial grounding in the possible. In other words, the floating space colony also floats free from any tangible path towards it.



Space settlement interior rendering by Rick Guidice for Gerard O'Neill and NASA in 1975.
Credit: <https://space.nss.org/settlement/nasa/>.

Though without a path, this speculative imagery also serves a purpose – and has an effect. It performs as a kind of “projectory” (Messeri and Vertesi 2015: 56), by orienting the conference audience towards not only a vision, but a belief in a social and technological progress to be catalysed by the infinite potential of outer space. The space elk, then, acts as a placeholder for the dynamic, thriving space future of “amazing things” promised by Bezos and other NewSpace actors. This far future vision also reveals another infrastructural dimension of the spaceflight sociotechnical imaginary, rendering the artistic pastiche as powerful as the reusable rocket engine. Here, the history of the Apollo programme and the successful launching of reusable spacecraft become the foundation for projecting a confident certainty in the unforeseeable and the unimaginable.

Peter Dickens and James Ormrod (2016: 19) describe a “substantial and growing gap between outer space as an ‘ideal space’ and outer space as a ‘real space’.” This gap mirrors the distance between imagined futures near and far, plausible and implausible; between the Blue Moon lander and the floating space colony presented by Blue Origin at the IAC. The lander materialises part of a “road to space” as envisaged by the company, grounded in affirmative demonstrations of technological mastery; whereas the colony represents the boundless promise of a space frontier opened up to entrepreneurial dynamism. Synthesising these different projectories – and orienting their intended audience – is the common vision and ambition for humankind to get off-planet and become a spacefaring civilisation. This spaceflight imaginary bridges the distance from near to far futures, and further enables the gap between grand visions and the physical reality of the space industry to productively form the basis for actual political negotiations and economic transactions. As infrastructure, the imaginary elevates anticipatory discourse regarding the very far future that commercial roads to space are speculatively building towards. This means lunar landers and space elk become not only meaningful but complementary in the collective imaginations found in Washington. Together, they work to direct the movement of an entire industry reaching beyond Earth.

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