

# Why we should keep boldly going where no one has gone before | Commentary

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The contrasting images of the siege of Kyiv and the rollout of NASA's Artemis vehicle, the Space Launch System (SLS), at Cape Canaveral could not be more stark. Once two competing spacefaring nations, the U.S. and Russia are fast diverging, surely never to again share the rivalry that once riveted the world.

Scott Kordella

– Original Credit: courtesy photo

Christian Zur

– Original Credit: courtesy photo

Beyond the historical context, something else is notable in the pictures of destruction. The prism through which the world is watching the horrific human toll in Ukraine is being captured from low-Earth orbit (LEO). Companies like Maxar, headquartered in Colorado, have provided news networks imagery detailing the bomb damage on the ground. Again, the contraposition is striking. As Roscosmos, the Russian space agency, cancels private sector launches for companies like OneWeb and threatens to withdraw support for the International Space Station, NASA and commercial companies continue forward. Moreover, with Artemis soon to launch and build the capacity to operate and maintain human presence on the lunar surface, the U.S. will stand uncontested as the sole spacefaring nation.

Worth noting is the remote sensing data captured 250 miles upward only decades ago was the exclusive domain of three lettered agencies. Moreover, until recently, the U.S. government preferred to own and operate its own space reconnaissance satellites. Today, that alignment has nearly come full circle with the commercial sector providing services to agencies and industry alike for an array of uses including signals intelligence delivered by commercial startups such as Hawkeye 360, to expanding internet access from companies such as SpaceX. The LEO space industry is surely maturing, and the next economic epoch will involve permanent human presence off Earth.

While there is hardly debate about the growth of the space sector nor its essential role in human history to come, amazingly critics decry the Artemis program as too costly and unnecessary. This frequent chorus of complaints reflects an incomplete understanding of the economic and national security imperative of America's enduring leadership in space.

The objective of the Artemis program is a permanent lunar settlement to be established along with allies and commercial partners. As America goes, so goes its flag and laws for this territory will need to be as transparent and fair as those on terra firma. That is how the space economy will truly thrive for the benefit of all.

Of course, innovation and invention come at a cost. Surely, critics existed back in 1943 when the U.S. Army funded the ENIAC, the world's first programmable, fully electronic computer. Decades later, criticism of the cost of the space program arose even during the height of the Apollo era. The recurring critique was that lunar exploration had no practical value to everyday people.

Curiously, in 1962, the cost of a single integrated circuit was around \$1,000, with the U.S. military and NASA being the sole customer for the entire market for missile and space guidance systems. But as necessity drives innovation, by 1969, due to the surge in production to meet demand, the per-chip cost was less than \$2

with increasing use in consumer electronics. While never the intent nor goal, America's space program propelled the Information Age whose DNA remains encoded in every device of the modern world.

As often the case, decision-makers in the U.S. fail to appreciate the advantage allowed to the nation which sets the rules of the road in space. Similar to global aviation where required operational communications are conducted in English, the space-dominant nation will determine acceptable norms for operations on orbit. The development of these rules, both governmental and commercial, are underway to manage the growing number of LEO satellites and soon will tackle lunar surface rights and responsibilities for all participants.

As Artemis I readies for America's return to the Moon, economic benefits will follow. But more importantly, continued U.S. leadership is essential for this future to unfold. As SLS rumbles toward historic launch pad 39B, the thunderous destruction 5,000 miles eastward makes clear that only one spacefaring nation will blaze the trail ahead.

*Christian Zur and Scott Kordella are founding members of the newly formed Commercial Space Initiative (CSI), a non-profit organization dedicated to predictable and sustainable uses of outer space.*

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