PERSPECTIVE

Need something more to worry about? Here comes space junk.

NASA ODPO

A computer generated image shows objects in Earth orbit currently tracked by NASA's Orbital Debris Program Office. The graphic was generated from a vantage point above the North Pole, showing the concentrations of objects in low Earth orbit (within around 1,200 miles of Earth) and in the geosynchronous region (about 22,000 miles from Earth).

By STEPHEN BUONO
Chicago Tribune

As if living in space weren't difficult enough.

The Russian military recently tested a direct-ascent antisatellite, or ASAT, missile on an old Soviet orbital, Cosmos 1408. The resulting cloud of debris — numbering 1,500 individual pieces so far — sent astronauts aboard the International Space Station scrambling for safety as the wreckage passed near the craft every 90 minutes. Secretary of State Antony Blinken echoed NASA and Pentagon officials in criticizing the "dangerous and irresponsible" demonstration. The political fallout is still ongoing.

Russia's test comes on the heels of a slew of international ASAT experiments that have occurred in recent years. In January 2007, China destroyed one of its own weather satellites with a kinetic kill vehicle. A year later the United States intercepted a defunct National Reconnaissance Office satellite, which contained nearly 1,000 pounds of toxic hydrazine fuel, using a modified SM-3 missile.

It is in light of these tests that one perceives events in space beginning to spiral out of control. Now, more than ever, we need a multilateral agreement, perhaps even a binding treaty, on antisatellite weapons. We ignore the problem at our peril.

Indeed, catastrophe looms. Altogether these tests have produced thousands of pieces of orbital debris, which have joined the millions of "space junk" objects already circling the globe around the clock. At this very moment, the Defense Department's global Space Surveillance Network is monitoring more than 27,000 such objects, the vast majority of which are larger than a softball. An uncountable multitude of other debris is too small to track.

In their orbits these fragments travel at speeds up to 15,700 miles per hour. That's more than 10 times the speed of a flying bullet and more than 20 times the speed of sound, fast enough to turn a toaster into a locomotive, a paint chip into piercing shrapnel. British astronaut Tim Peake brought the point home in 2016 when he snapped a photo of a dent in the glass window of the space station that had been inflicted by a

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crumb-sized scrap of debris no more than a few thousandths of a millimeter across. That's about the width of dental floss.

Imagine, if you can, the cascading damage that might ensue from continued testing. An ASAT weapon eradicates a satellite. The debris crosses paths with one of more than 5,000 active satellites now occupying low-earth orbit. More debris is created. The increasing mass of whirling garbage destroys more satellites. Still more debris. And on and on it could go until the entire space-based infrastructure on which we rely is at risk.

Back to using gas station maps and wads of cash to split the restaurant bill.

NASA scientists Donald Kessler and Burton Cour-Palais imagined just such a scenario in a seminal 1978 paper for the Journal of Geophysical Research. Collisions between the growing number of LEO satellites, they predicted, would lead to the growth of a belt of debris around the Earth. "Under certain conditions the belt could begin to form within this century and could be a significant problem during the next century," the scientists wrote.

Remarkably, in the very same month that Kessler and Cour-Palais published their findings, the United States and the Soviet Union began talks to place limits on ASAT weapons. Then, seemingly overnight, new life breathed into the Cold War. Though the Kremlin submitted a draft treaty on space weapons to the United Nations in 1981 and again in 1983, no agreement on ASATs was forthcoming.

We are even further away from that agreement 43 years later, when "the Kessler syndrome," as the cascading theory is known, appears to be a real possibility.

It is essential that the ASAT players — China, India, Russia and the United States — begin multilateral talks to mitigate the environmental and security risks posed by the destruction of satellites. Though diplomats from each of these powers have issued declarations professing deep-felt objections to "the militarization of outer space," to date they've rung hollow.

Thankfully avenues for reconciliation already exist. Canadian law professor Michael Byers headlines a massive list of experts who have written an open letter outlining the contours of a Kinetic ASAT Test Ban Treaty. Since the mid-1980s the United Nations has hosted committee debates and issued resolutions for the Prevention of an Arms Race in Outer Space Treaty, which would forbid the use of force against space objects. And the U.N.'s Institute for Disarmament Research has submitted its own proposal for ASAT test guidelines.

Now for Pete's sake, for our Wi-Fi's sake, get started!

Stephen Buono is a postdoctoral fellow at Stanford University's Center for International Security and Cooperation.

In New London, a Magnet attraction

It may take a while to get used to thinking of the New London High School campus on Jefferson Avenue as the North Campus (NLHS Multi-Magnet Campus) on Chester Street. The building orientation has rotated to the north, and the lot formerly lined with parked yellow buses now leads to a big, wide, welcoming entrance with an unmissable sign — in Whaler green, naturally.

The total remake of the campus will accommodate the magnet pathways of International Education, Performing and Visual Arts, and STEM (Science, Technology, Engineering, Math), as well as the arts magnet pathway for middle schoolers. The combination of new construction and renovations won't be done until the end of 2023, on a schedule that allows two more summers for environmental mitigation work while students are safely out of the way.

But last week New London Mayor Michael Passero could not wait another minute to show off the new spaces already in use. He chose 3 o'clock on a Thursday — after-school activities time — to host a tour led by architect Drew Ferris of Antinozzi Associates, construction managers from Newfield-Downes, Senior Project Manager Diana McNeil, and Kate McCoy, assistant superintendent for magnet pathways and district operations.

The vista from the new front entrance is magnetic, architecturally and educationally. The view opens up wide and deep and inviting. In the morning and afternoon it serves as a hallway for hundreds of students as they arrive or leave, but on that after-school hour its length provided a practice ground for the Junior ROTC program. Girls and boys drilled on bearing the colors for future presentations of the flag.

After a half-century of making

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do with the old building, nothing about the new wing feels too tight or tight-fisted. Instead of a new gymnasium, which according to current standards for state reimbursement would have had to be much smaller than gyms of old, the project managers convinced the state that a renovation of the legacy gym should qualify. Girls basketball players were practicing dribbles under rehung Whalers championship banners. It just felt right.

Students and faculty needed no time at all to make themselves at home in the space that got its official occupancy certification in September. On the lower level the tour group briefly interrupted a teachers' meeting in the new cafeteria. The room itself is appealing, but when you know that it was built on top of the filled-in pool that always leaked and was rarely open, it looks even better. The old auditorium is now a new auditorium; it has not moved, but around it have sprung up a TV studio, a bandroom apiece for the high school band and eventually the middle school band, dance studios and practice rooms.

The school system's website notes that administration of the New London Public Schools, city officials, the School Maintenance & Building Committee, and the staff of New London High School have been working on the expansion and renovation since 2014. I would add Diana McNeil who, as senior project manager for the Capitol Region Education Council, has been working with all of them for years on plans and reimbursement for the high school and the Bennie Dover Jackson Middle School.

Just one month before anyone knew that a pandemic would close the schools, The Day's Greg Smith reported that the "long-delayed" $108 million reconstruction of the high school would soon begin. Covid-19 notwithstanding, it went ahead.

No project is without complications, but Thursday was not the day for carping. The high school improvements are a lift for a pandemic-weary school community and a place for pride. I think that will help with the challenges of returning to class after more than a year without the activities and community spirit this building is designed to foster.

Lisa McGinley is a member of The Day Editorial Board.