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With the right gear and know-how, anyone can keep tabs on the clandestine "moons" that surround our planet.

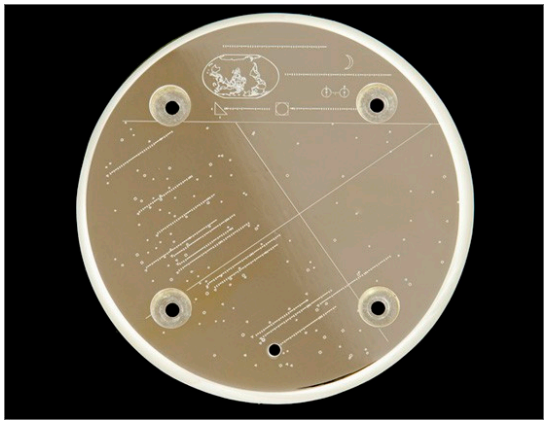
Behind the night sky is another sky, one obscured by legal darkness and criss-crossed by satellites we're not meant to know exist. This is the "other night sky," as geographer-turned-artist Trevor Paglen calls it, a world of clandestine moons and unacknowledged orbiters. Kept out of official reach by defense and intelligence services, this hidden sky nonetheless can be uncovered—if you have the gear to track and observe it.

One of Paglen's many projects over the past ten years has been documenting this surreptitious astronomical realm, where surveillance spacecraft, military communications platforms, and rumored electromagnetic weapons drift in a state of near-invisibility. Many of these "black" satellites, as Paglen refers to them, are launched as National Reconnaissance Office missions, which means they receive the prefix NROL, or National Reconnaissance Office Launch. As websites such as "Gunter's Space Page" and "Spaceflight 101" readily show, there are many NRO launches planned for the years to come, including NROL-61, scheduled for a July 28th launch from Cape Canaveral, Florida, and NROL-79, slotted for December, to name only two.

We can know when and where the satellites go up; in other words, what we're not supposed to know is where they go and what precisely they do there.

In his 2009 book Blank Spots on the Map, Paglen takes a trip "a few miles north of the U.S. frontier" in order to meet with amateur satellite-spotter Ted Molczan in Toronto, Canada. According to Paglen, Molczan performs "a very peculiar version of amateur astronomy," inhabiting a world where "even full-time defense industry journalists and aerospace historians have a hard time knowing exactly what's what." As Molczan tracks a sky that "doesn't want to be seen," he reveals what Paglen evocatively describes as "Earth's most secret moons." "In most cases," Paglen writes, "the reflection is all we get."

Molczan is already widely known for his work in the very small but increasingly global world of satellite trackers, although he has attained something closer to notoriety in the realm of U.S. intelligence. Molczan and his loose confederacy of colleagues use high-powered optical gear, precision clocks, orbital prediction software, and the latest news they can find of U.S. satellite launches to piece together a semi-coherent map of an atmospheric geography that state officials would prefer to keep secret.



Trevor Paglen's disc with "The Last Pictures."

For Paglen, this is a question of watching the watchers, of revealing U.S. taxpayer-funded tools of planetary espionage and military communications that make things like overseas drone wars possible. It is about treating the National Geospatial Intelligence Agency as "the Pentagon's geography department," he writes in Blank Spots on the Map, deducing from their activities a sense of where and how the U.S. seeks to project its territorial power.

If you understand the locations of these satellites, then you can begin to deduce their underlying motivations, Paglen suggests—including what might be coming next, in terms of spotting satellites parked over future conflict zones. Think of it as a kind of predictive cartography of wars yet to come.

As Paglen explained to me over the telephone, his project is about "seeing the historical moment that you live in, and noting that a landscape that human beings have been looking at for tens of thousands of years is different now—and it's different because we put satellites up there. Some of them stay up there forever. Some of them are spying on you. Some of them are being used for telephones or the internet. Some of them are exploring Mars, or what have you." But it's the ones that try to escape notice that are, almost by definition, the most interesting.

When satellites are seen drifting from traditional orbits, engaging in what appears to be electromagnetic snooping on nearby constellations of satellites, or even purposefully disguising their locations using mirrors and Vantablack paint, then you know that you are witnessing a covert space program in which even the heavens themselves can be militarized.

For Paglen, however, something more purely artistic—more conceptual than political—lurks at the edges of this same investigative project.

In his introduction to a project called "The Last Pictures," for example, a note of sublimity creeps into Paglen's voice. "Over the last fifty years," he writes, with a sense of awe, "hundreds of satellites have been launched into geosynchronous orbits, forming a ring of machines 36,000 kilometers from earth. Thousands of times further away than most other satellites, geostationary spacecraft remain locked as man-made moons in perpetual orbit long after their operational lifetimes. Geosynchronous spacecraft will be among civilization's most enduring remnants, quietly circling earth until the earth is no more." They will outlast the pyramids—by far—surviving beyond even the continents we live on.

In response to these seemingly eternal spacecraft, Paglen has produced a series of beautiful, long-exposure photographs featuring geostationary satellites. For "The Last Pictures," however, he went beyond mere documentation, instead finding a way to participate in the same artificial astronomy of which he was once only a spectator. Paglen attached a specially fabricated metallic disc onto a yet-to-be-launched geosynchronous satellite. It was, as he describes it, "a micro-etched disc with one hundred photographs, encased in a gold-plated shell, designed [to] withstand the rigors of space and to last for billions of years."

That disc was installed on satellite EchoStar XVI, and successfully launched back in 2012, meaning that Trevor Paglen's "The Last Pictures" is now as permanent a part of the Earth's night sky as the moon and stars, another element in the expanded catalog of artificial astronomical objects that he, Ted Molczan, and their colleagues continue to study.

Much of the intrigue of Paglen's and Molczan's work comes from their brush with the world of top secret and clandestine services, accompanied by all of the elaborate conspiracies such a dark realm entails. A further conceptual resonance comes from the uncanny realization that geosynchronous satellites are so far above the Earth's surface that, from the point of view of human civilization, they might as well be eternal.

Their work gives us a glimpse of the fate of astronomy in one possible far-future scenario, in which a cataclysmic war or pandemic disease reduces humans to technological penury, the records of our world's space programs long since lost to time. Hundreds, if not thousands, of human generations could pass during which the ability to launch these sorts of artificial moons and orbiting spacecraft will seem so impossible as to sound more like medieval myths of angels or esoteric stories from global folklore.

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It is not hard to imagine some determined group of future astronomers gradually honing their observational tools once again in order to peer up at the lights burning far above the Earth's surface every night. Amongst those wandering stars and constellations, however, will be hundreds of fixed points, unblinking lights that never move. These will be the same geosynchronous satellites that people today once studied, and they will spend billions of years in the sky before ever being at risk of falling back to Earth. That's billions of years of false stars for future astronomers, billions of years of myths and rumors as to what those lights might be—these artificial constellations that never seem to fade—reflecting the sun from on high.

In fact, Paglen himself has taken this sort of fantasy one step further. At a lecture in Amsterdam a few years ago, I listened as he described for the audience a post-human future Earth in which it might actually be deep-sea squid, with their huge brains and ultra-sensitive eyes, who might float up to the surface of the seas on quiet nights to stare at these unblinking lights that appear to follow no laws of planetary motion—and that seem to stare back at them, godlike, in turn.