

# A Quiet, Faraway Milestone for Humanity

By Lawrence M. Krauss

A new chapter in civilization's quest to travel to the stars may have begun quietly this month. It didn't involve starship captains careening through the cosmos, or astronauts making yet another visit to that orbiting tin can in the sky called the International Space Station. Rather, like so many of NASA's scientific achievements, humans weren't even present for the breakthrough.

According to data being relayed from the tiny Voyager 1 satellite, launched from Earth in 1977, the device appears to have exited the solar system on its way out into interstellar space.

Originally expected to operate for five years, the satellite (and its sister satellite, Voyager 2) are still daily recording their exposure to galactic cosmic rays and charged particles emanating from the sun. Voyager 1, though it was launched a few weeks after Voyager 2, has traveled farther and is now 11 billion miles away from Earth.

It may seem strange to hear that Voyager 1 is only now leaving the solar system, when Voyager 2 passed the outer planetary reach when it passed Neptune 23 years ago. (Remember that astronomers have decided—ill-advisedly, I think—that Pluto is no longer a

planet.) But leaving the solar system is akin to leaving America by ship. One may depart from the mainland, but until one leaves territorial waters, one is bound by the laws of the United States.

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**The satellite Voyager 1, launched in 1977, could be the first man-made object ever to leave the solar system.**

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The sun similarly controls a vast volume of turf around it as it sails through the galaxy, carrying the solar system with it. We are all moving at more than 125 miles per second as the sun follows an orbit that takes roughly 200 million years to complete.

In addition to the light it emits, the sun burps out a stream of charged particles called solar wind. The wind goes in all directions, filling a bubble around the solar system and pushing back against the flotsam and jetsam of interstellar space, including cosmic rays from other energetic objects and stray magnetic fields associated with stars and other galactic structures. The bubble is like a gigantic placenta protecting

the solar system from outside influences.

Has Voyager 1 broken through the sun's bubble and reached the vast interstellar medium on its way to eternity? The Jet Propulsion Laboratory has three criteria for establishing that this has happened: The stream of particles coming from the sun should fall off, the stream of charged particles coming from the galaxy should increase, and the direction of the magnetic field surrounding the satellite should change.

Over the summer, Voyager 1 began to detect significant changes in the flux of particles from the sun and from the galaxy. By the beginning of September, the rise in galactic cosmic rays became sustained, accompanied by a dramatic falloff in particles coming from the sun. The only thing that remains to be seen, then, is whether the magnetic field observed by Voyager has changed. Data for that are still being analyzed. But if it walks like a duck, and quacks like a duck . . .

Voyager 1 would be the first human-made object to venture outside the sun's protective shield. Engineers estimate that it and Voyager 2 could continue broadcasting what things are like out there for up to another decade. After that, when these two lonely

bits of metal go dark and cold, they will continue to travel. After perhaps 50,000 years they will get closer to our neighboring stars than they are to our sun.

Where will humanity be in 50,000 years? Will we have bypassed these accidental tourists on missions of our own to nearby stars or possibly habitable planets? Or will we have turned inward, hobbled by limited resources and beset by tribal conflicts, in a world resembling some of the bleaker post-apocalyptic fiction of the past decades?

No matter what happens on Earth, we have left our mark on the galaxy. The chances that the Voyagers will directly encounter another solar system—let alone life—are remote in the extreme.

But it is good to know that NASA engineers put golden records on both satellites, conveying sound and images of our world to any extraterrestrial civilizations. After we are long gone, even if no one is likely ever to receive it, there will be proof in our galaxy that we once existed.

*Mr. Krauss is a professor of earth and space exploration and director of the Origins Project at Arizona State University. His books include "A Universe From Nothing" (Free Press, 2012).*

## Make Way for the Metro-Evangelical

Downtown Seattle's Daniels Recital Hall, with its soaring Beaux Arts dome, intricate woodwork and stained glass, is about to become a church again. The developer who saved it from the wrecking ball has signed a long-term lease with Mars Hill Downtown Seattle, a resolutely

### HOUSES OF WORSHIP

By Andy Crouch

evangelical congregation that has been worshipping in a former nightclub since its founding in 2008. With 1,500 members, the congregation outgrew its old, less-than-ideal quarters, where for a time the congregants used exotic dancers' cages as coat racks.

Christians in Seattle aren't alone in wanting to reclaim the heart of their city as a place for worship. Though the American evangelical movement is often stereotyped as rural and provincial, it has actually had its greatest success in the suburbs and exurbs, where entrepreneurial pastors found cheap land and plentiful parking to build the "mega-churches" of the past generation—think Willow Creek Community Church in South Barrington, Ill., seating capacity over 7,000.

But a new generation of church founders believes that city centers will be the beachhead of a new evangelization. While U.S. cities aren't growing as fast as overseas metropolises like Lagos or Shanghai, their renaissance since the

cultural headlines of the last generation, and it has been accompanied by burgeoning urban congregations. On a Sunday morning in any American city the signs of change come in literal form: placards on sidewalks and corners announcing church meetings.

The growth in city-center churches is in tune with the times, summed up by Harvard economist Edward Glaeser's book "The Triumph of the City." News outlets like National Public Radio have aired numerous stories on the boom in urban studies. And my own employer, the evangelical magazine Christianity Today, has embarked on a two-year series of cover stories and documentary films about the urban Christian revival called "This Is Our City."

New York City pastor and best-selling author Timothy J. Keller helped spearhead the movement more than two decades ago. In 1989, he moved from rural Virginia to Manhattan and founded Redeemer Presbyterian Church. With several thousand in worship every week, Redeemer Presbyterian is perhaps the most celebrated city-center church story of recent years.

"You go to the city to reach the culture," Mr. Keller tells his congregation. This, he explains, is as old as religion itself, and points to what New Testament scholar Wayne Meeks called "the first urban Christians"—the first-century churches founded in provincial

and very quickly in Rome itself.

From a missionary standpoint, cities have always been centers of cultural activity and potential congregations. Mr. Keller's followers see the challenge to influence the culture as a neglected calling for evangelical churches that have become too complacent on their

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**'You go to the city to reach the culture,' says New York City pastor Timothy J. Keller.**

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suburban campuses. And given the pervasive secularity and competing temptations of a city like New York, if Christians can make it there, they can make it anywhere.

Growing even faster than city-center churches are immigrant churches in places like Los Angeles and Brooklyn that serve new arrivals from all over the world. And urban ministry, targeted at the physical and social needs of residents (housing, recreation space, education and the like) has been an emphasis of U.S. churches—both Protestant and Catholic alike—for generations.

That emphasis continues in the new generation. Redeemer Presbyterian's nonprofit affiliate, Hope for New York, gave more than \$1.1 million in grants to community development, counseling

But city-center pastors are starting to pay as much attention to the spiritual needs, and social influence, of residents of penthouses as those in public housing. This shift from "urban ministry" to what some call "metropolitan ministry" seeks opportunities to connect the up-and-in to the down-and-out.

Mars Hill Downtown Seattle, for instance, not only offers a wide range of services to the needy, but its pastor served a term as president of the neighborhood business association.

And like other new arrivals, evangelicals are finding that the city has more to offer than just the advancement of a cause. Jon Tyson, 36, founding pastor of Trinity Grace Church in New York, says the culturally strategic nature of New York was "the determining factor" that brought him there in 2005. Now, he says, "We wouldn't want to live anywhere else. Our children are thriving here. We love the city."

As these city-center congregations expand and thrive—from San Francisco to Houston to Manhattan—expect a lot more sidewalk placards to turn into permanent signs at corners like Fifth and Marion, the new home of the Mars Hill Downtown Seattle congregation.

*Mr. Crouch is an editor-at-large at Christianity Today and author of "Culture Making: Recovering Our Creative Calling" (Inter-*