

Why Explore?

Priit J. Vesilind



OVERVIEW

The spirit of exploration has inspired people from ancient and modern civilizations alike. What drives people to explore? The *National Geographic* magazine sought to answer that question. Reporter Priit J. Vesilind collected some thoughts on the motives behind exploration, and presented them in the February 1998 issue of the magazine.

GUIDED READING As you read, consider the following questions:

- What does the author conclude about why humans are driven to explore?
 - What effects has exploration had on humankind?
-

WE ARE A DIM and lonely star in the darkness of the deep-sea floor, where no other light has shone. I am on my belly in a submarine, 2,800 feet down—where the water pressure would crush the lungs of an unprotected human being—peering through a porthole. Our lights pick up mostly sediment across the antiheavens of the Mediterranean Sea. Only the occasional grouper peers back.

I am on the NR-1, a U.S. Navy research submarine, Jules Verne's *Nautilus* come to reality. Nuclear powered, it can stay submerged indefinitely. A robotic arm with steel finders protrudes from its bow. Retractable wheels emerge to let the vessel roll along the bottom like a slow and silent midnight train.

This summer the Navy has leased the NR-1 and its 11-man crew to a team of technoarchaeologists who have been exploring 2,000-year-old trade routes for shipwrecks. As I watch through the porthole, we reach the remains of a Roman-era cargo ship: silt-covered piles of amphorae—graceful clay pots for shipping wine or oil—copper kettles, an anchor.

Back on the nearby *Carolyn Chouest*, a surface support ship for the NR-1, Robert D. Ballard of the Institute for Exploration in Mystic, Connecticut, savors this latest offspring of antiquity and high tech. Dr. Ballard, leader of the expedition, seems wired with an impatient and playful energy, as if born with an extra battery pack.

He and a cadre of technicians, computer scientists, and archaeologists are operating the expedition's other underwater vehicle, the unmanned *Jason*, which is equipped with sonar, television, still cameras, and excavation tools and driven through fiber-optic cables from the *Carolyn Chouest*. The team has already discovered and mapped eight wrecks. Archaeological exploration has

never been attempted this deep, on such a scale, and with such a multidisciplinary team.

“The limit of scuba divers and most marine archaeologists is 200 feet,” Ballard told me when I returned to the mother ship. “But 97 percent of the ocean lies *below* 200 feet. Some 10,000 ships have sunk in this area of the Mediterranean alone. Most shallow-water wrecks have already been looted, but the wrecks we’re finding here are pristine.”

Archaeology is a new discipline for Ballard, who pioneered journeys to the Mid-Atlantic Ridge, discovered new life-forms around hydrothermal vents in the Galápagos, and located the *Titanic*. He describes his work as a series of quests, like the ones undertaken by the original Jason in pursuit of the Golden Fleece.

“Exploration is still the epic journey,” he said, “to dream, to prepare yourself, to assemble your team of argonauts, to go forth to be tested mentally and physically by the gods. To pass the test, to be given the truth, and then come back and share the new wisdom.”

For Ballard the spirit of exploration is an integral part of being human. “Everyone is an explorer,” he said. “How could you possibly live your life looking at a door and not go open it?”

But meaningful exploration today takes more than courage and ambition. It often requires specialized education and expensive hardware—not an undertaking for every man.

“The key is science,” said Ballard. “Science gives legitimacy and worth to exploration. You see a lot of stunts today, but if you’re not doing worthwhile science, you’re not an explorer. You’re just wandering around.”

Is there still a place for argonauts, or have they been supplanted by machines and a technological elite? And if exploration still carries personal glory and national prestige, what journeys are legitimate? Why do we explore?

To take stock, I visited four professionals who have come to symbolize achievement in the three arenas of exploration: Ballard in the sea, Richard and Meave Leakey, paleoanthropologists, on land, and Neil Armstrong, former astronaut and lunar pioneer, in air and space.

I found that exploration is a passion that is intertwined with our search for origins and destiny. It demands good science, and it celebrates the human spirit.

A THOUSAND YEARS ago the world known to Western civilizations centered on this Mediterranean Sea. It extended to China in the east, the Baltic Sea to the north, Saharan Africa and India to the south. Westward lay the vast and dreaded “green sea of darkness,” and farther south smoldered a semi-mythical terra incognita, a land where, it was said, men turned permanently black.

Societies lived in mutual ignorance of one another. The French did not know of the Inca, and the Songhai of Africa had no inkling of the Inuit. “The

unknown and the forbidden were thought to be the same,” writes historian Daniel Boorstin, and better left to priests and wizards. The explorer stood apart as someone with a touch of madness.

Norseman Leif Eriksson reached North America around the year 1000, but the momentum to explore built slowly. It would be five centuries before other Europeans landed on that continent.

Why were Europeans the ones to push to the Americas? The Chinese and Arabs had the resources and technology to leap the seas, and both plied the Indian Ocean and the Asian Pacific for trade. But exploration? By the mid-15th century China had withdrawn into traditional Confucian isolationism. The Arabs, with access to the minerals and spices of Africa and the Far East, saw no need to journey into the unknown.

Europe, on the other hand, needed gold and silver; its mines could not keep pace with the demand for coinage. Ottoman Turks blocked the overland routes to Asia. Only the sea held the promise of new wealth.

Christianity reconciled profit with piety. God had commanded the human race to subdue the Earth, and Christianity valued individual action; exploration would glorify God. The Portuguese and Spanish, when they tested the Atlantic, were still imbued with medieval chivalry and the fervor of the Crusades. If Africans or Native Americans were killed or enslaved in the process of their conversion, it was a small price to pay for eternal life.

With the return of Magellan’s ship in 1522 from its circumnavigation of the globe came the confirmation that the oceans were interconnected, boosting the age of discovery. National rivalries propelled the brave and ambitious. The English, as well as the Spanish, Portuguese, and French, became obsessed with finding the “river of the west” through North America to the Orient.

It was not until the 1700s that intellectual curiosity emerged as a primary motivation for European explorers. From 1768 to 1779 English Captain James Cook charted the waters of the Pacific and upgraded the standards of exploration forever. By 1800 most of the seas had been explored and roughly mapped.

The voyage of the British Navy’s H.M.S. *Challenger* from 1872 to 1876 was the first devoted to studying the world’s oceans, but 120 years later oceanography, like astronomy, has touched only the fringes of its science.

“It’s mind-boggling,” said Bob Ballard. “It’s almost the year 2000, and we’re probing the moons of Jupiter, but most of the ocean floor remains totally unexplored.

“The land surface beneath the sea is 71 percent of the Earth,” he said, “and the life-form they think they may have found in the meteorite from Mars is similar to one we found in the vents around the Galápagos. Such vents may be the site of the origin of life on our planet.”

IN THE ARID SAVANNA of Kenya, near the Equator, the sun plummets behind the acacia trees and the stars explode like fireworks. Mars glows amber, and the sky is so transparent that even the blackness between each point of light is sprinkled with a fine stellar dust, each grain another unfathomably distant star.

Lions don't come around the camp much, says my host, Richard Leakey, so I drag my bed outside the tent and lie beneath the stars, too awestruck to sleep. The light from those stars in the Andromeda galaxy left some two million years ago, when the hominid called *Homo erectus* strode two-legged across this very river valley. From Africa the first explorers reached out and eventually populated the Earth.

Richard Leakey is the maverick son of Kenyan paleoanthropologists Louis and Mary Leakey, a man who refused a college education and became one of the world's experts on early humans. He and his wife, Meave, sustain a family legacy of research that is now, with the work of their daughter Louise, three generations deep.

Since the continents have been mapped, exploration of the Earth is largely left to those who look inside—geologists, paleontologists, archaeologists—scientists traveling through layers of time instead of distance.

“To me it's a question of being able to look backward and give the present a root,” Richard said. “To give meaning to where we are today, we need to look at where we've come from.”

Richard, who flew me here in a four-seat Cessna from Nairobi, lost both legs below the knees as a result of an airplane crash four years ago. A fearless man, he regards this as just a nuisance. As we circled the site in the Great Rift Valley where Meave has been excavating four-million-year-old fossils, he adjusted his prostheses to make sure the shoes sat firmly on the brakes before we roared down to the crude earthen strip and rattled to a halt.

He looked over and grinned: “Bet you've never been flown by a double amputee before!”

Grandson of missionaries, Richard explores in part to bring credit and dignity to Africans. Since his work has been validating the theory of evolution, he has problems with some religious views, particularly with regard to the issue of our origins.

“This is an enormously important issue for me,” he said. “It seems so totally wrong that the African people are lacking the real sense of being important to the planet. Here is a continent that should be looking at its prehistory and saying, ‘This is where everyone began.’”

The irony is that religion and scientific exploration attract equally ardent disciples. “In both, if you have total belief in the righteousness of your cause,” said Richard, “you will do extraordinary things and take enormous risks. As a scientist you can do it because you desperately want to know. That is what is driving Ballard to the bottom of the sea, and people into space, and people to live in really rough conditions year after year, digging in the ground, because they want the truth. They want to know what is there.”

Said Meave Leakey, “Exploration is an obsession. The more I discover, the more I want to know. Unfortunately I will not discover everything I want. One can never, never find all the answers.”

Most of the world was finally linked in the 19th century, as technological advances energized the expansion of the United States and the colonization of Africa by Great Britain, France, Germany, and Belgium.

European explorers knew they were not “discovering” these lands that others had occupied for centuries but bringing knowledge of them into a shared record. “Unknown to science” was the new criterion for discovery, and scientific explorers felt they were assembling an inventory of Earth.

The polar regions were last to be defined, and their mapping ended the era of nationalistic land exploration. The Antarctic Treaty of 1959 turned that continent into an international scientific preserve, shared today by 43 nations. The Poles still attract adventurers eager to test their endurance, but scientists there proceed systematically, using the most advanced technology. The *answer* is their Golden Fleece.

BEYOND THE HAZE of atmosphere, astronauts say, stars do not twinkle—they remain constant—their steadiness mocking the paltry distances humans have traveled. Stars are in fact unspeakably hostile to life, immense and ravenous. But to explorers, from Argonauts to astronauts, they have been a comfort. Michael Collins, who was the navigator on Apollo 11, man’s first landing on the moon, wrote of the stars, “Even today, when I fly in the night sky . . . I look up and experience an almost physical wave of nostalgia. There are my old friends . . . with friendly yet mysterious names.”

Collins’s Apollo 11 crewmate Neil Armstrong has never written a book about himself or the flight, humankind’s most significant journey. Nor has he publicly philosophized about the heavenly bodies. His passion was to meet the technical challenge. “There was plenty of romance for everybody,” he told me, “but not everybody could make it happen.” He chose to be a doer.

Armstrong is careful to protect his privacy, so I met the first man on the moon in a hotel room near Cincinnati’s international airport, a world of thundering jet engines: his kind of world. “I’m an explorer but not a discoverer,” he said bluntly. “I’ve gone to places, but I haven’t found anything that was previously unknown.”

NASA astronauts are explorers of a different ilk, tethered to a vast bureaucracy for which the unknown is anathema. All uncertainties are to be avoided, or planned for.

Armstrong is an unassuming man from a small town in Ohio. He is armed with a crooked, boyish grin but suffers no fools. He deflects most publicity with an engineer’s cool logic. “I was trying to follow NASA’s stated mission: Investigate the problems of flight and seek solutions to those problems. I was trying to find methods of making craft that would expand the human envelope.”

But the motivation to send humans into space was not primarily technical or scientific. It was national pride, part of a high-stakes Cold War battle of ideologies.

The first man to orbit the Earth, on April 22, 1961, was Russian cosmonaut Yuri Gagarin, followed in August by cosmonaut Gherman Titov. Titov tweaked American sensibilities when he told an interviewer, “I looked around and didn’t see . . . God or angels.”

So President John F. Kennedy’s exhortation that year to land a man on the moon before the end of the decade could be compared to the Spanish call to rise against the Moors.

In December 1968 Frank Borman, Jim Lovell, and Bill Anders finally broke free of Earth’s gravity in Apollo 8 and moved into the lunar orbit.

On Christmas Eve, while circling the bleak satellite, the U.S. astronauts answered Titov by reading from Genesis. Anders began: “In the beginning God created. . . .” And Borman finished, “. . . and God saw that it was good.”

“It’s often been said, I think correctly,” said Armstrong, “that Apollo 8 was the spirit of Apollo—leaving the shackles of Earth and being able to return.” The moonwalk, he said, was simply another element of that concept.

Apollo 11 came the next year, and only 66 years after the Wright brothers at Kitty Hawk. Lunar scientists hoped that manned exploration would resolve competing theories about the origins of the moon and of Earth itself.

Some critics charged that the costs were unacceptable while economic disparity still plagued the U.S., but most of the world hailed the achievement. Despite the two-nation struggle, the Outer Space Treaty of 1967, patterned after the Antarctic Treaty, stipulated that “The exploration and use of outer space . . . shall be carried out for the benefit and in the interests of all countries. . . .” No one could own the moon.

“We came in peace for all mankind,” reads the plaque that Armstrong and Buzz Aldrin left on the moon’s surface.

“Do you feel you went for all mankind?” I asked Armstrong.

“I think so,” he answered, after rolling the question over in his mind. “The information gathered, scientific and general interest, was returned to all countries, friend and foe. NASA never held anything back. That’s about as close to ‘for all mankind’ as one can reasonably hope.”

FIVE HUNDRED YEARS before space flight, learned men thought the sun and planets revolved around the Earth—the center of the universe—until astronomer Nicolaus Copernicus advanced the astounding idea that the Earth rotates on its axis and revolves around the sun.

The theory made sense to Galileo Galilei, an Italian mathematician. He constructed a 20-power telescope in 1609 and lifted it to the heavens.

When Galileo attempted to reinterpret the Bible using Copernican theory, the Roman Catholic Church condemned the theory. In 1633 the Inquisition sentenced Galileo to life-long house arrest for attempting to prove the theory

to be true. But it could not stem the ascent of logic that spurred a revolution in science. Scientific exploration elevated humankind but toppled us from the center of the universe. Our struggle ever since has been to understand where and how we fit.

“Since Galileo the things we’ve been seeing are beyond human understanding or comprehension,” said Armstrong. “No question. A cloud that’s three light-years tall? Human beings don’t like to be considered small.”

Today’s most profound destinations are the infinitesimal or the infinite. Biologists explore microworlds, and the Hubble telescope, our bright eye beyond the atmosphere, sends back vivid and stunning images.

Now a new program has revived enthusiasm for on-site space exploration. Last July 4 NASA landed the three-foot-high Pathfinder on Mars. Cushioned with air bags, it bounced like a basketball, dribbled to a halt in freezing darkness, and opened like a tulip. When the sun energized its solar panels, out rolled a wagonlike vehicle called *Sojourner*, named for Sojourner Truth, the 19th-century abolitionist.

On July 8, I turned my computer to the Internet, put on cardboard 3-D glasses, gripped the mouse, and embarked on a Mars walk. My visit was one of nearly 47 million hits on the Mars site that day. For one giddy week we all became explorers.

Why were we on Mars again after 21 years? To see if there is evidence of life. The mystery of genesis runs wistfully but powerfully through exploration. Pathfinder landed in a region once swept by catastrophic floods, where layers of rocks are exposed as clearly as those in the Great Rift Valley.

In September another NASA probe—the Mars Global Surveyor—went into orbit around the planet for a two-year mapping mission. The agency plans to send pairs of spacecraft to Mars every two years and foresees a manned mission early in the 21st century. Maybe a human being, feet planted firmly on the planet, can determine if indeed Mars hosted life.

And if life once thrived on that dusty planet and died, what of life on Earth? Can we expect to be overtaken someday by the natural evolution of heavenly bodies—to have been just a wink in time? Humans are egocentric, fearing extinction as much as cosmic loneliness. Driven by reason from the center of the universe, we still search for who we are, exploring deep-sea vents, the valleys of prehistoric rivers, the floodplains of distant planets.

“Are we alone in the universe?” I asked Neil Armstrong.

“Well,” he answered, “we’ve seen a substantial change in the confidence that there are planetary systems outside our own. It was strictly a hypothesis when I was a child.”

Even if we are alone, the Apollo explorations showed that Earth need not be the final tomb for humankind. If we can reach beyond our planet, we may ensure survival. We can dream of immortality. We can strive to touch the stars.

Source: Vesilind, Preet J. “Why Explore?” *National Geographic*, Vol. 193, No. 2 (February 1998): 40-45.