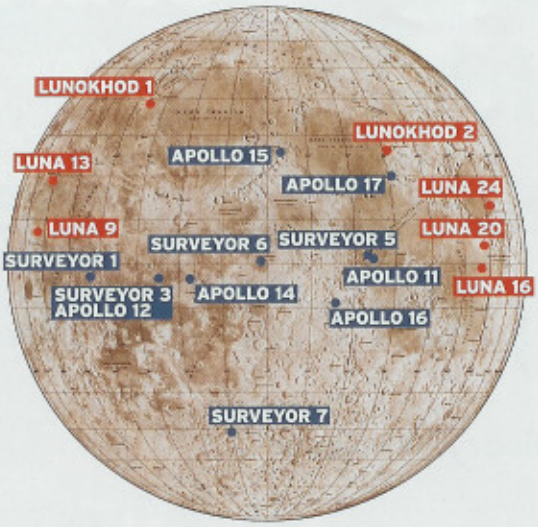
leave on the moon, though it (and the planets) are common property, according to international treaties. In practical terms, that means no nation has jurisdiction over the lunar soil, upon which artifacts and precious footprints rest. "It would be our strong preference that those items remain undisturbed unless and until NASA establishes a policy for their disposition," says Allan Needell, curator of the Smithsonian National Air and Space Museum's Apollo collection. The "preservation of the historical integrity of the objects and the landing sites" would be a primary goal, he adds.

A Nice Place to Visit

American (blue) and Soviet (red) lunar landing sites, from Luna 9 in 1966 to Luna 24 in 1976



HOW MUCH STUFF have people left on the moon? Professors and students from New Mexico State University (NMSU) cataloged equipment left behind at Tranquility Base and identified more than 100 items and *in situ* features from Apollo 11 alone, including Buzz Aldrin's spacesuit, Armstrong's famous footprint and a laser ranging retroreflector, which, for the first time, measured the precise distance between the moon and Earth. Much of the equipment was discarded by Armstrong and Aldrin just prior to lifting off to rendezvous with the orbital craft that would take them home; they needed to lighten the lunar module ascent stage, which they'd burdened with 40 pounds of lunar rocks and soil.

The New Mexico researchers had hoped that their inventory would help them gain protection for Tranquility Base as a National Historic Landmark. But the National Park Service, which oversees the program, rejected the proposal, saying the agency doesn't "have sufficient jurisdiction over the land mass of the Moon." Moreover, a NASA lawyer advised that merely designating a lunar site a landmark "is likely to be perceived by the international community as a claim over the Moon"—a land grab that would place the United States in violation of the 1967 Outer Space Treaty. So Beth Laura O'Leary, an anthropologist who led the NMSU project, added the historic lunar site to an official list of archaeological sites maintained by the state of New Mexico. It's a largely symbolic gesture, but it does mean at least one governmental body recognizes Tranquility Base as a heritage site. "You don't want people putting pieces of Apollo on eBay any more than you want them chiseling away at the Parthenon," O'Leary says.

Of course, NASA itself has done some extraterrestrial salvaging. In 1969, in arguably the first archaeological expedition conducted on another world, Apollo 12 astronauts Alan Bean and Pete Conrad visited the robotic Surveyor 3 spacecraft, which had landed two years earlier. They inspected the landing site and removed the spacecraft's television camera, a piece of tubing and the remote sampling arm. The parts were returned to Earth so researchers could assess the lunar environment's effects on equipment.

While archaeologists take a hands-off approach to the six Apollo landing sites, researchers are more open to granting access to robotic sites. Charles Vick, a senior analyst at GlobalSecurity.org and an authority on the Russian space program, says historians could learn a lot about the still-shrouded Soviet space program by studying equipment left behind during the USSR's Luna probes, which landed between 1966 and 1976. In 1969, the USSR's Luna 15 probe crashed into the moon. Its mission was believed to be collecting lunar rocks and returning them to Earth, but scholars in the West still aren't sure. "We're not going to know until we go there and check it out," Vick says.

Without new international agreements, the norms governing lunar archaeology are likely to remain vague. The Lunar X Prize rules state that an entrant must get approval for a landing site and "exercise appropriate caution with regard to the possibility of landing on or near sites of historic or scientific interest." Teams going for the bonus prize must submit a "Heritage Mission Plan" for approval by the judges, "to eliminate unnecessary risks to the historically significant Sites of Interest." (Lunar X Prize participants were scheduled to meet in late May to discuss the rules and guidelines.) Still, the contest rules don't specify what constitutes an unnecessary risk. And there's no guarantee where the competing spacecraft will end up. With no traffic cops on the moon, the only deterrent against damaging sites might be the prospect of negative publicity.

O'Leary says the Lunar X Prize's lack of regulation is "scary"—a sentiment shared by others. But at least one Lunar X Prize entrant, William "Red" Whittaker, a professor of robotics at Carnegie Mellon University, has a simple solution to minimize risk: after landing, his team's rover would use telephoto lenses to view Tranquility Base from afar.

To Pomerantz, the competition's director, merely debating how to protect lunar history is a welcome sign that humanity is finally on the verge of going back: "It's exciting when questions that seemed distant and hypothetical are becoming not too distant and not too hypothetical after all." For now, archaeologists are just hoping a robotic rover doesn't take a wrong turn. ○

MICHAEL MILSTEIN *writes for* The Oregonian *in Portland.*

PHILIP J. STOCKE / UNIVERSITY OF WESTERN ONTARIO