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## **THE LIGHT SIDE OF THE MOON**

*The wow factor kicks in at the new planetarium.*

BY ANTHONY LANE

Immanuel Kant said that two things gave him constant cause for wonder: the starry firmament above and the moral law within. Both are addressed at the Rose Center for Earth and Space, the new and resplendent appendage to the American Museum of Natural History. Drivers who turn off Central Park West onto Eighty-first Street and catch sight of the new planetarium can be forgiven for losing control of their rear ends; a silver-white sphere, eighty-seven feet in diameter, hung inside a glass cube like the desk toy of an executive giant, is hardly your standard roadside attraction, even in New York. It opened to the public on February 19<sup>th</sup>; since then, visitors have been lining up to enter the sphere, like those hardy pioneers in red jumpsuits at the end of "Close Encounters of the Third Kind." In the soft darkness, they sit and watch "Passport to the Universe," a thirty-minute virtual canter to the end zone of creation. After that, they are spoiled for choice: they can head for the Hall of the Universe, the Planet Zone, the Black Hole Theatre, and the Earth Event Wall, or simply cool off amid galactic merchandise. A day at the Rose Center is ample demonstration that Kant missed a trick. There are in fact three things to marvel at: the starry firmament above, the moral law within, and the specially designed bow-tie-and-cummerbund set available at the Planetarium Shop for \$76.

So what happens to the moral law inside you as the show exerts its grip? How could your valuation of humanity not start to sink as the awful truth hits home? The bottom half of the sphere is filled with a brief demonstration of the big bang; as the aftershock fades, all you want is to lie back and light a cigarette, instead of which you are swiftly ushered out onto the Harriet and Robert Heilbrunn Cosmic Pathway. This spiralling ramp covers thirteen billion years of evolution; depending on your size and stride, it will take you about fifty million years to advance one step, a sensation familiar to anyone who has tried waiting for a cab outside the Port Authority on a Monday morning. The luminaries, including Mayor Giuliani, who gathered on February 16<sup>th</sup> for the official dedication of the Rose Center made a credible case for the thrill and lustre that the new exhibit will add to the city, and a slightly less trenchant case for the improvement that it will bring to our interstellar ratings. New York, we were told, has long been "the capital of the world"; from here on, it would be "the capital of the universe." Bad news, ladies and gentlemen: as far as the cosmic map is concerned, we're somewhere in a chicken coop on the outskirts of a ruined village in Chad.

Yet there is hope. Like Mr. And Mrs. Heilbrunn, we march slowly and steadily upward. Not only have we evolved to a level at which we can nurture such majestic inventions as the Hayden Planetarium, the Hubble Space Telescope, and Cameron Diaz; not only have we peered into the farthest reaches of other solar systems and wondered if that faint, spectroscopic glow could be someone waving back at the camera and saying "Cheese!"; we have also, in the full courage of our cluelessness, stepped off the edge of the planet, held our breath, and taken the plunge. The space program gets a pretty bad press these days, and with some justice; it is generally agreed that, next time the boys at NASA land one of their hundred-million-dollar Lego sets on Mars, they should all try to work from the same slide rule. But there was a time – and some of us can't wait for it to come again – when breaking

the surly bonds of Earth was the most pressing of scientific challenges, the sharpest spur to human enterprise, the coolest career choice, and the only way by which perfectly healthy citizens could get to suck lunch out of a tube. In retrospect, the space race was less about feeding an old spiritual hunger, let alone about scoring political points, than about finding new and unsuspected hungers to sate. Reading Tom Wolfe's "The Right Stuff" or Andrew Chaikin's "A Man on the Moon," you catch barely a whisper of atomic-age leeriness; what you hear, through the jockeying of the fliers and the word-clipping static of their exchanges with Mission Control, is more like the last hurrah of the Oklahoma land rush. As with any space museum, the Rose Center needs to honor the floating sweat and free-fall exultation of life in orbit, and so, from now until September, it is showing a selection of Apollo photographs entitled "FULL MOON." If your mind wilts at the thought of other people's vacation snaps, think again.

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There were a dozen missions in all, starting with Apollo 1, which burned up during the launchpad test in January, 1967, and closing with Apollo 17, which staggered back to Earth with two hundred and forty-three pounds of rocks and soil under its belt, in time for Christmas, 1972. In the intervening years, the astronauts found time – it's not as if they had anything else on their hands – to take roughly seventeen thousand photographs. A further fifteen thousand were taken automatically by mapping cameras installed on the spacecraft. The cream of the crop has been picked by the artist and photographer Michael Light; last year, he arranged them into "FULL MOON" (Knopf; \$50) – a large, square volume that is almost comically beautiful. Now seventy-two of those images have found their way onto the walls of the Rose Center, where they split into three categories: the voyage to the moon, the trip around the moon, and the big stone ball in the sky that caused all the fuss.

When mankind first headed in that direction, nobody thought to preserve the trip for posterity; the dynamics of rocketry and orbital flight were so engrossing that poor old photography – an invention of the previous century – didn't stand a chance. As on every mission for the last forty years (most cleverly, and most fruitfully, Apollo 13), a textbook procedure needed a further touch of improvisation, of casual human marginalia; John Glenn had to go and buy himself a 35-mm. Minolta over the counter, like a tourist hoping to catch a sunset in Hawaii. Even then, NASA didn't click until Wally Schirra followed suit in the fall of 1962; he went to a Houston camera store and came back with a basic Hasselblad 500C and an 80-mm. lens, having presumably asked the salesman – as you do – what would work best in space.

He got the right answer. Hasselblads were already associated with flight; the earliest models were constructed for use by the Swedish Air Force. By the time the Apollo missions began, the NASA-Hasselblad connection was functioning smoothly; it continues to this day, and the near-mythical status of Hasselblad in medium format (the negatives are two and a quarter inches square), forever enhanced by images from space, is rivalled only by that of Leica in 35-mm. The camera that Neil Armstrong and his team took to the moon was a customized but perfectly recognizable version of the commercial Hasselblad; the trim was stripped away, the controls were made chunkier for gloved hands, and any lubricants – not a good idea in zero gravity – had been replaced by graphite. Conspiracy nuts, inspecting the results, have declared that the lunar photographs are so good that they could never have been taken by amateurs under such testing conditions; they must therefore have been rigged under studio lights, probably by the same people who killed President Kennedy. One flaw in this argument is that astronauts are noted more for their flying skills than for their mendacity; had NASA wanted to maintain a deep

pretense, it could have waited twenty years and hired Robert De Niro. The other objection is statistical; on Earth, pros will always hedge their bets by firing off multiple rolls of film in a session, and the same holds true in space. If you take thirty-two thousand photographs, some of them will come out pretty well.

They look even better these days. Michael Light has digitally scanned them, so that you can spot every wrinkle in the imprint of Buzz Aldrin's footprint. (That step, incidentally, could survive intact and uncorroded for as long as two million years, thanks to the lack of wind on the moon; if we blow ourselves up, it could be one of the few means by which other civilizations will be able to learn of our glorious existence, or, at least, of our average shoe size.) The folds and scoops of the lunar landscape, with their backdrop of permanent velvet, assume a strange, granular softness, as if they were etched in drypoint. Sometimes, the ridged tracks left by the lunar rover, dwindling toward the hills, offer the perspective you need; at other times, the reliability of the image begins to crumble. If you pride yourself on distinguishing telephoto shots, because of the way in which background and foreground squash together and shrink the depth of field, try to decipher the pictures that David Scott took of the Hadley Rille in the summer of 1971. Photographed through a 500-mm. lens, the stone-strewn floor of the valley looks gentle and close – a bend to be rounded in a few minutes' walk. Only when you pull back, and observe it through Scott's standard 80-mm. lens, does the crue resolve itself into the distant segment of a monumental canyon; the loose, kickable rocks ahead are actually boulders, up to forty-five feet wide. Kick one of these and your leg would fall off. On Earth, you would never be tricked like this; even on the most shining day, up in the mountains and away from the smog, remote objects will start to haze in the atmosphere. Such helpful gradations of tone are unknown in the airless clarity of the moon; the yonder may be far, but it is never blue.

So what color is the moon? What we stare at in the sky is a circle of pale gray, unevenly patched; but the astronauts saw a light tan that baffled them, and some of the individual samples broke all the rules. James Irwin and Scott, on Apollo 15, found lumps of what turned out to be green glass, as if young alien partygoers had left their empty bottles behind. On board the final mission was Harrison Schmitt – a geologist, and the first scientist in space. One of the creepiest passages in Andrew Chaikin's history of the Apollo program comes when Schmitt, staring at the dust disturbed by his boots, shouts into his microphone, "It's *orange*." In the photograph taken that day, you can just make out the glow of this mystery substance – the vestige, like the glass, of ancient volcanic activity – a few yards on either side of him. The surprise is even greater because, apart from miniscule details like the wheel arches of the lunar rover and the lemony tinge of its radio dish, nothing else in this vast picture tells you that it is a color print. At first glance, you would swear that it was black-and-white. If the Apollo missions hadn't come to an end, maybe NASA would have run out of geologists and started sending up movie buffs; who better qualified to report back on a world made from film noir?

The scale of these photographs is a big issue. They were impressive enough on the page; at the Rose Center they are generously enlarged, with a corresponding increase in what astrophysicists term the Wow Factor. Some are composite images – single photographs joined at the hip, as it were, to form a linked panoramic sequence, not unlike the Polaroid constructions of David Hockney. Because of the time taken to frame each photograph, the same astronaut will sometimes appear twice, having walked, or likely bounced, from one area of landscape to another. Then there is the jaw dropper, the photograph that tells so dazzling or terrifying a story that you run around showing it to anyone who will look – Ken Mattingly's shot of the lunar module Orion, for instance, as it rises from the moon to dock with him in the orbiting Casper. The module is a speck, a scrap, a morsel of metal plankton, and

the craters looming behind it are a thousand times bigger; you half expect them to pulsate, like jellyfish, and the idea that we dared visit such monstrosities, let alone to depart in the assumption that we had prised open their secrets, feels impudent to the point of madness. Our relationship with unearthly things, and hence our precarious sense of self, is transformed by such grandeur; a moon the size of a mural somehow acquires a force so iconic that you wonder whether it belongs in a museum at all. You can picture it hung high in a temple, and you can certainly understand the exalted place that it still holds in the religious imagination. Andrew Chaikin tells the story of Stu Roosa, the command module pilot on Apollo 14, who many years later visited Nepal with his wife. Some Nepalese believe that the moon is home to the spirits of their forefathers, and Joan Roosa was told, "You're married to a god."

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The astronauts who appear in "FULL MOON" do not look like gods. They look like coal miners hitting a rich seam. True, the visors on their helmets give off a heavenly golden glimmer, but everything else bears the scars of extraterrestrial graft. Once moondust works its way into the wrinkles of a costume, it's impossible to brush away, and if Eugene Cernan's mother could have seen him – happy but wrecked – posing for a colleague after three days on the lunar surface she would have told him to go and wash up before appearing in front of the camera. On Apollo 7, Walter Cunningham took a picture of his commander, Wally Schirra, who had a bad cold; sinuses don't drain well in space, and Schirra has the piggy eyes and puffed cheeks of a man in serious need of hot whiskey and lemon. Cunningham himself, snoozing in Earth's orbit, is hardly a pretty sight: with his rounded black shades, and his stubble even thicker than Schirra's, he makes all too clear the physical strains imposed by the Apollo enterprise. Nobly into the unknown goes the fine flower of American manliness, and back comes Lou Reed.

The most celebrated photograph – the full-length color portrait of Buzz Aldrin by Neil Armstrong – does not appear here, and you can see why. It has become the Mona Lisa of the moon gallery: repeated on a million posters, at once thinned and overburdened by familiarity. The lunar explorers were fed and sustained by fresh imagery, and the point of this exhibit is to recapture the shock of the new. So, instead of the Aldrin photograph, we get something altogether less posed and more pugnacious: Charles Conrad's head-on shot of Alan Bean, taken at Sharp Crater in 1969. Bean's arms are half splayed by the distended sleeves of his spacesuit, so that his hands hang wide of the hips; his own Hasselblad is mounted on a bracket at chest height, with a pistol grip screwed to the base. The total effect, with the lens jutting straight at us, is alarmingly close to the classic pose of the gunslinger. It suggests, with a rigor that I haven't seen since the movie of "The Right Stuff," that the astronaut's professional curiosity was overlaid by something close to confrontation. The moon didn't go all the way and turn them into wolves, but you can see how the legend arose. When you read of Armstrong switching to semi-manual control on his final approach, landing the module with only twenty seconds' worth of fuel in the tank, or of John Glenn, in the hard infancy of the space program, wrestling his capsule down through the Earth's atmosphere, you can't help feeling the heat of life at full burn.

Needless to say, the fellows in white suits kept their cool. "You cats take it easy on the lunar surface," said Mike Collins to Armstrong and Aldrin, as he unhitched Eagle and sent them on their way to the moon. Two and a half hours later, he told Charlie Duke, down in Houston, "Listen, babe, everything's going just swimmingly." Some people – writers, mostly, who would have fainted with dismay after one day of basic training – lamented that the men whom America sent into space were not articulate or impassioned enough to register the enormity of their

undertaking, but such an ungrateful complaint is wrong in every respect. The astronauts knew full well that they were pioneering on behalf of a planet, and it was in the very ordinariness of their reactions that they carried the human voice – always impressionable, never free from caution, resting on dependable words when fancy ones sound too rich – across two hundred and forty thousand miles. “It’s big, and bright, and beautiful,” Neil Armstrong said as Eagle settled onto the surface.

“Beautiful view,” agreed Aldrin a while later, as he followed down the steps. “Isn’t that something?” Armstrong said, as if they were stretching their legs at the end of an August picnic. When he went to the launchpad, Armstrong had in his pockets a roll of LifeSavers and a comb. After all, you never know whom you might meet.

“FULL MOON” is true to this clash, the quotidian bumping gently into the unprecedented. A closer shot of Orion shows it battered and buckled by its adventures; how touching to be reminded of the lunar modules, and of the absurd, if correct, belief that human beings could be protected by metal sheeting one two-hundred-and-fiftieth of an inch thick. Beyond its frailty, however, the module also delivered a stern rebuke to the imaginings of science fiction. Well before Flash Gordon, writers and designers had favored the sleek and symmetrical, as if the sole concern of future societies would be to iron out anything that people could trip over; yet here was a small bundle of steel that, in all its crumpled pokiness, was an unimprovable guide to the virtues of the race that made it – tenacity, teamwork, and the will to find use and even beauty in the graceless. Look at a flying saucer, on the other hand, zipping between galaxies with no more than a low hum, and you just know that the guys inside would be completely floored if you gave them a plate of ribs and no cutlery, or told them to change a flat.

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It may sound odd that a tour of the Rose Center, with its clean lines and efficient sense of history, should make us proud of our shortcomings; but the effect of “FULL MOON,” as of the other exhibits, is not merely to trumpet our scientific ability but to drive home our delightful inability to make sense of the universe. Listen to people walking around, and the word you will hear most frequently is “like.” The moon shots were a flurry of experience for which we still have no adequate points of comparison, so we just toss up as many inadequate ones we can think of and hope that some of them stick. My notes on “FULL MOON” read like this: “Bullet holes.” (Four shots of the Timocharis Crater.) “Icebox.” (Clouds over the Pacific Ocean, viewed from a hundred and twenty miles.) “Golf ball.” (An especially pocked-looking moon; no wonder Alan Shepard packed a makeshift six-iron.) None of these are accurate, but they are as close as I can get. There is even “Vagina” (Messier Crater) next to “Sperm” (Hadley Rille); that smacks of perversity, of course, but the crater in question does lie in the Sea of Fertility, and Michael Light juxtaposes the two pictures in his book, so I guess I am not the first to see the joke. Whether Neil Armstrong would have got it is hard to say, although he and Aldrin, as they removed their helmets in the safety of the lunar module, happily traded similes over their day’s work; one man thought that moondust smelled of “wet ashes in a fireplace,” the other preferred “spent gunpowder.” Both would be outdone by Clifford Frondell, the Harvard geologist who was present when the first box of moon rocks was opened on live television, in July, 1969. “Holy shit!” he said. “It looks like a bunch of burnt potatoes.”

When words fail us, we have to make them up, and I like the tale of Ken Mattingly, as he dropped his colleagues on the surface and began his lonely vigils – made companionable by Mahler and Berlioz – on the far side of the moon. Once back in radio contact, he said, to no one in particular, “There’s old Mother Earth. Man, that’s a beauty, too. Never get tired of watching earthrise.” The rest of us will never see it. “Earthshine” and “earthrise” are not merely neologisms; they were

coined to describe experiences that were themselves entirely new, at least to human eyes, and you wonder how far the vocabulary of a lunar community would stretch. Would moon dwellers spend their cold, lonely evenings reading "Earthraker" or sitting around a digitally enhanced fire singing "Earthlight Becomes You"? There are inchoate plans to revisit the place and add to the eternal footprints, but the dream of permanent bases, either as mineheads or as staging posts for further exploration, may be the purest moonshine.

One photograph from the Apollo days is even more solidly embedded in our culture than that of a triumphant Aldrin; it is the image of Earth from space – looking, as Armstrong would say, big, and bright, and beautiful. It single-handedly jolted the environmental movement into active life, and made everyone think twice about fouling our blue skies. There is, it turned out, no place like home; but why does that mean we have to stay put? There will be other places, somewhere over the rainbow, that look like nothing on Earth, and somebody – Hasselblad in hand – should go and check them out.

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