S03E20 - Can We Live On the Moon?

The Multiverse Employee Handbook - Season 3

The Multiverse Employee Handbook has this to say about Humans Living on the Moon:

From an interstellar perspective, this development was inevitable. Given sufficient intelligence, curiosity, and surplus government funding, humans were always going to attempt to inhabit the nearest inconvenient rock.

The humans already possess a perfectly serviceable planet, complete with oceans, breathable air, fully functioning gravity and Bubble Tea. Why relocate employees to a place where dust is as sharp as glass and stepping outside to walk the dog requires life support? The prevailing theory is that humans consider difficulty a feature.

The Moon, it should be noted, has no atmosphere, no weather, and no particular interest in hosting tenants. It is, by design, an airless archive of rocks, impact craters and silence.

Lunar employees will bounce between modules, hold meetings in partial gravity, and gaze frequently at Earth, which appears small, luminous, and improbably unified from that distance.

The handbook notes that when separated from their planet by a quarter of a million miles, humans display increased cooperation and reduced shouting. The universe finds this encouraging. It suggests that perspective works, but only when installed manually.

In summary, humanity living on the Moon is not a sign of conquest, nor of escape. It is a species testing whether it can expand its habitat without exporting all of its problems. Early results indicate mixed performance—but measurable growth. Continued observation is recommended.

You’re tuned into The Multiverse Employee Handbook.

Today, we’re exploring whether humans can actually live on the Moon—or whether this represents humanity’s most elaborate response to the question “but have you tried living somewhere actively hostile to organic life?”.

Within 25 years, humans could be living full-time on the Moon. An actual base.

With walls. And plumbing. Not the “fusion is only 25 years away” kind of 25 years —an Earth-calendar 25.

We’ll dig into the mechanics of permanent lunar life: actual propulsion systems, legitimate radiation math, and a level of optimism that politely bets your cardiovascular system will sort itself out later.

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But first, gather round the quantum airlock, my gravitationally-disadvantaged colleagues, for a tale that would make even Isaac Newton question his commitment to universal gravitation.

In the fluorescent-lit realm of Quantum Improbability Solutions, specifically in the Extraterrestrial Personnel Management Division—which existed in a superposition of “technically operational” and “profoundly unprepared for this”—Commander John Koenig was having what could charitably be called an orbital anomaly crisis.

It had started, as these things often do, with the Moon leaving.

Not gradually. Not politely. The Moon had simply decided, with no prior consultation with Earth’s gravitational preferences, to depart the Earth-Moon system entirely.

One moment, Moonbase Alpha was humanity’s premier lunar research facility. The next moment, they were accelerating through interstellar space at velocities that made the astrophysics team genuinely uncomfortable.

The official QIS memorandum described this as “an unscheduled orbital reallocation” and assured all personnel that “normalcy protocols remain in effect.”

Commander Koenig, watching unfamiliar constellations drift past the viewport, had thoughts about normalcy protocols. He kept these thoughts to himself, primarily because Dr. Helena Russell—Chief Medical Officer and the only person who could operate the good coffee machine—was already dealing with fourteen cases of what she’d clinically termed “acute existential displacement syndrome.”

Also, they were both wearing jumpsuits. Aggressively optimistic jumpsuits in a shade of orange that seemed designed by someone who’d heard about the visible spectrum but had never actually seen it. The jumpsuits featured unnecessary piping, decorative zips that opened nothing, and bell-bottoms that served no practical purpose in low gravity.

This was QIS dress code. The jumpsuits had seemed less absurd when Earth was still visible.

Koenig was reviewing supply manifests—six months of oxygen, perhaps six days of morale—when the emergency docking klaxon announced an arrival.

The Square-Haired Boss materialised in the airlock with the kind of timing that suggested either quantum teleportation or a very aggressive travel budget. His hair maintained its characteristic perpendicular architecture despite the journey.

“Commander. Doctor.” The Boss nodded to each in turn, his expression calibrated to convey Managerial Concern. “I’ve come for a Listening Session.”

He glanced at their jumpsuits. His left eyebrow rose approximately three degrees.

“Interesting uniform choices.”

“Company regulation, sir,” Koenig replied.

“Ah. Yes. Well. Let’s convene in the conference module.”

The conference module had windows. Large windows. With the cosmic backdrop rotating through configurations not found in any terrestrial star chart, the windows felt somewhat accusatory.

The Boss settled at the head of the table. “I want you to know that your emotional experience of this unscheduled relocation is valid. And synergistic.”

Dr. Russell blinked. “Synergistic?”

“Your feelings are in strategic alignment with organisational transformation objectives.”

“We’ve left the solar system,” Koenig said carefully.
“A significant transition event,” the Boss agreed, gazing thoughtfully at the drifting stars. “I imagine that’s been challenging. I want you to feel heard.”

There was a pause. The kind of pause that occurs when the universe itself seems to be waiting for someone to acknowledge the absurdity.

“I’ve been in close consultation with HR,” the Boss continued. “Despite the spatial dynamics, all annual performance reviews will proceed on schedule.”

“Performance reviews,” Koenig repeated.

“Absolutely. The fact that Earth is now approximately four billion kilometres behind us does not diminish our obligation to feedback cycles.” He leaned forward. “Now.

What support do you need during this period of cosmic adjustment?”

Dr. Russell opened her mouth. Closed it. “We’re travelling at point-one-two percent of light speed toward a region of space that our astrophysicist describes as ‘notably void of anything.’”

“Understandable source of stress,” the Boss acknowledged. “Have we considered mindfulness training?”

“We’ve considered,” Koenig said slowly, “attempting to reverse our trajectory. But we’d need eight thousand percent more fuel than we possess.”

“Resource constraints. Classic operational challenge.” The Boss paused thoughtfully. “Perhaps the Moon might consider drifting a little more toward Earth? If that works for everyone?”

The silence that followed was the kind of silence that occurs when someone has just suggested bargaining with celestial mechanics.

“Sir,” Dr. Russell said carefully, “the Moon is not, strictly speaking, sentient.”

“Ah. Disappointing. I’d hoped we might facilitate a dialogue.”

He glanced toward the viewport, then at his tablet, then—very briefly—at the corridor leading to the emergency shuttle bay. His eyes performed a calculation: whether a shuttle rated for four crew members could accommodate one extremely rectangular executive.

The Boss caught Koenig looking and smiled professionally.
“Of course, QIS stands with Moonbase Alpha through this transition. We’re all in this together.” He paused. “Figuratively speaking. I will need to return to the home office shortly for strategic planning purposes.”

“Naturally,” Koenig agreed.

“But your sacrifice is noticed. Valued. And will absolutely be reflected in the Q4 performance metrics.”

As the Boss departed toward the shuttle bay—walking with slightly more urgency than arrival protocol required—Dr. Russell turned to Koenig.

“He didn’t actually help with anything.”

“No,” Koenig agreed. “But he listened. Which, according to the handbook, counts as support.”

Through the window, a star field nobody from Earth had ever named drifted past.

“Right then,” Koenig said. “Shall we see if we can point this runaway Moon toward something habitable?”

Dr. Russell smiled grimly. “At least the empathy tour is over.”

The Boss’s shuttle vanished in a flash of bureaucratic efficiency.

Behind them, the Moon—indifferent to their plans, unconcerned with their jumpsuits, and profoundly uninterested in company policy—continued its trajectory toward regions unknown.

And in the archives of Quantum Improbability Solutions, a new handbook entry was quietly drafted: Section 23.8(f): When Facilities Achieve Escape Velocity—Guidelines for Empathetic Leadership During Unscheduled Interstellar Deployment.

The guidelines were thorough, compassionate, and arrived approximately six months too late to be useful.

Which was, Koenig reflected, remarkably on-brand.

And that brings us to the fascinating science behind actually living on the Moon—which, unlike Commander Koenig’s predicament, does not involve the Moon spontaneously achieving escape velocity.

Between 1969 and 1972, twelve humans walked on the lunar surface as part of NASA’s Apollo programme. They collected rocks, planted flags, drove rovers about, and then came home. Eugene Cernan, the last person to leave footprints up there, departed in December 1972.

And then—nothing. Fifty-three years of cosmic ghosting.

Those bootprints remain exactly where he left them, unimpressed by our absence and unbothered by weather, on account of there not being any.

But now, we're going back. Not for ideology this time, but for something far more compelling: geopolitics, commercial ambition, and water ice. Turns out frozen water on the Moon is worth its weight in rocket fuel. Literally.

Two programmes dominate this new lunar race. NASA's Artemis—a multinational effort backed by the Artemis Accords, signed by over forty-five nations—plans to establish a sustained presence at the South Pole.

Meanwhile, China's International Lunar Research Station programme, developed with Russia, is pursuing an independent path with its own timeline and considerably less paperwork.

The question has evolved from "Can we go to the Moon?" to "Can we actually stay there?" Which is rather like the difference between visiting your in-laws for the weekend and moving into their spare room permanently.

The science is simultaneously straightforward and catastrophically complicated. Yes, we can build habitats.

Yes, we can extract water from regolith. Yes, we can generate oxygen. But can we do all of this whilst simultaneously preventing our skeletons from gradually demineralising and our DNA from accumulating radiation damage?

When we return, we'll explore exactly what it takes to get back to the Moon, what living there actually entails, and whether humanity's first lunar-born generation will consider Earth a distant memory or an impossible dream.

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Welcome back, my gravitationally-advantaged listeners!

Right. Let's discuss the actual mechanics of returning to the Moon and, more ambitiously, not leaving, or dying.

Back in season 2, episode 28 we covered the cosmic tragedy of Apollo 18, 19, and 20—the missions that never happened—humanity was remarkably good at getting to the Moon in the early seventies. If you haven't checked out that episode, I suggest you do.

We'd sorted the engineering. Built the infrastructure. And then promptly dismantled it all and spent fifty years insisting we'd get back to it later. Well, later has arrived, fashionably late and considerably over budget.

NASA’s Artemis III mission represents our grand re-entry into lunar exploration. The plan: launch four astronauts aboard the Orion capsule using the Space Launch System. Two crew members then transfer to SpaceX’s Starship Human Landing System, a vehicle standing roughly fifty metres tall, and from this authors entirely objective perspective, bears a striking resemblance to a large suppository.

They’ll land at the lunar South Pole—one of nine candidate regions—for a total surface stay of six-and-a-half days.

During this time, they’ll conduct multiple spacewalks wearing Axiom spacesuits, which have been designed with input from Prada, because apparently fashion matters even in vacuum. They’ll search for water ice in permanently shadowed craters, deploy scientific instruments, and collect samples whilst trying very hard not to think about the fact that they’re standing on a rock with no atmosphere, surrounded by razor-sharp dust, being bombarded by radiation.

The timeline, officially, is 2028. Unofficially, it’s “2028, assuming nothing else goes catastrophically wrong.”

Several things have already gone somewhat wrong. The Orion heat shield, for instance, shed material during the uncrewed Artemis I mission in a manner that NASA describes as “unexpected” and engineers describe as “deeply concerning.”

Artemis II — the crewed lunar flyby meant to prove the system works with humans aboard — has faced delays related to a hydrogen fuel leak discovered during testing.

Hydrogen, being both highly energetic and impressively elusive, has a long tradition of escaping at the least convenient moment. The result has been a launch schedule adjustment.

Also, Starship HLS hasn’t yet completed an uncrewed lunar landing demonstration. And the orbital refuelling architecture—which requires multiple tanker launches to fill Starship’s tanks in Earth orbit before it proceeds moonward—remains magnificently untested.

Meanwhile, China’s International Lunar Research Station programme proceeds with the steady determination of a nation that watched the West fumble its lunar legacy and decided to simply do it themselves. Their Chang’e missions have already achieved a far-side landing and sample return. Chang’e-7, launching this year, will scout the South Pole for ice. Chang’e-8, arriving in 2028, will test resource extraction technologies.

China plans to land taikonauts on the surface by 2030 using their Long March 10 rocket, the Mengzhou capsule, and the Lanyue lander—a two-person vehicle designed for six-day surface stays. It's a parallel programme with parallel ambitions and, crucially, a separate bureaucracy.

Now, fast-forward twenty years. Getting to the Moon becomes less "monumental achievement requiring international cooperation and the GDP of a small nation" and more "regular commute involving multiple orbital transfers." Earth orbital stations serve as staging posts.

The Lunar Gateway—positioned in a Near-Rectilinear Halo Orbit, which is the kind of orbit you get when you ask physicists to design something maximally efficient and minimally intuitive—acts as a waystation.

Cargo runs become routine. SpaceX, Blue Origin, Intuitive Machines, and others operate lunar landers like delivery services, except the packages are pressurised habitats and the delivery address is "grey dusty bit near the permanently shadowed crater."

The economic driver is ISRU—In-Situ Resource Utilisation, which is the science term for "dig up the local ice and turn it into things you need rather than shipping everything from Earth at catastrophic expense." Water ice, extracted from places like Shackleton Crater where temperatures hover around minus-two-hundred-and-thirty degrees Celsius, gets converted into drinking water, breathable oxygen, and liquid hydrogen fuel.

This transforms the Moon from "expensive destination" to "cosmic petrol station."

Permanent habitats go underground. Lava tubes—naturally occurring tunnels formed by ancient lunar volcanism—provide ready-made radiation shielding. Alternatively, you pile regolith on top of surface modules until the cosmic rays give up and go bother someone else.

It's rather like opening a distant branch office, except the office is an underground tube, the commute is multiple days via rocket, and the printer still, definitely doesn't work when needed.

But the infrastructure, improbably, begins to make sense.

So. You've arrived at the Moon. You've set up your underground habitat. You've solved the radiation problem by simply refusing to spend time on the surface unless absolutely necessary. Congratulations. Now what?

Let's visit Selene Base, circa 2046. Population: approximately fifty humans, several hundred autonomous robots, and one main central AI system probably not named HAL.

Meet Kira Okonkwo, cryogenic mining engineer. Her alarm goes off at 05:30—not because the Sun has risen, it hasn't, won't for another week, polar locations being what they are—but because the habitat's circadian rhythm management system has decided she's had sufficient sleep.

Artificial dawn simulation begins. Medical telemetry uploads automatically: bone density holding steady, cardiovascular markers acceptable, radiation exposure within limits. She's due for her mandatory centrifuge session—thirty minutes of simulated Earth gravity to convince her skeleton not to gradually demineralise. It's rather like going to the gym, except the consequences of skipping it involve osteoporosis.

Breakfast happens in the communal galley, a pressurised cavern carved into an ancient lava tube. Today's menu: hydroponically-grown spinach, cherry tomatoes from Lunar Farm Module 3, and cultured chicken produced in bioreactors fed by recycled organic waste. It's not entirely self-sufficient—quarterly resupply flights from Earth still deliver supplementary rations—but it's getting there. An artificial skylight projects a real-time feed of Earth, hanging small and luminous against the black sky.

At 09:00, work begins. Kira supervises autonomous mining rigs operating inside Shackleton Crater, where temperatures reach minus-two-hundred-and-thirty Celsius and stepping outside would constitute immediate cryogenic preservation. From her control room deep underground, she monitors three robots that scoop, heat, and sublimate ice. The captured water vapour gets piped to the ISRU Processing Plant on the crater rim, where electrolysis converts it into liquid hydrogen, liquid oxygen, and potable water.

This is the economic heartbeat of the base. Without it, nothing functions. No fuel. No oxygen. No showers, which after three months underground becomes a morale issue.

Midday break involves more hydroponically-grown vegetables and the pleasant fiction that lunch hour represents a meaningful division of the day. Kira joins colleagues in the galley. Conversation topics include: whether Dave from accounting can actually count, which Earth city is currently visible through the observation lounge, and why the dust management protocols keep failing in Section Seven.

Her afternoon shift takes her to the surface. She dons her Axiom-III spacesuit—fourth-generation technology featuring electrostatic dust-repelling surfaces that work approximately sixty percent of the time—and drives an unpressurised rover two kilometres to the Tsiolkovsky Far-Side Radio Array. Her task: replace a degraded antenna feed. The lunar far side, shielded from Earth's constant radio chatter, represents the quietest location in the inner solar system for radio astronomy. Maintaining the array is considered scientifically essential and personally tedious.

Back underground by 17:30, she joins colleagues for low-gravity volleyball in the recreation dome. Players leap three metres into the air. Volleys last impossibly long. It's become the base's signature sport, though Earth-side physicians remain concerned about the long-term joint impact.

Evening involves Earth-gazing from the Observation Lounge, a pressurised surface blister with floor-to-ceiling windows. Residents call it the inverse Overview Effect—Earth as constant, humbling presence rather than fleeting glimpse. Many describe it as the most profound experience of their rotation.

Sleep cycle begins at 21:00. Kira reviews her medical telemetry one final time, confirms tomorrow's geology sortie into an unexplored lava tube section, and settles into her berth.

This is lunar life. Not comfortable. Not Earth-like. More analogous to a submarine or Antarctic research station than a city. Everything recycled. Everyone monitored.

Constant technological mediation between human biology and an environment that remains profoundly indifferent to human survival.

And then there's the unknown that keeps the medical team awake: What happens when someone gives birth here?

Gestation in one-sixth gravity remains unstudied. Foetal bone development, cardiovascular formation, muscle growth—all evolved for Earth's gravity. Would a child born here ever be able to visit Earth, or would our planet's gravity prove crushing? Would they consider the Moon home and Earth the alien world?

The ethical questions are vast. The scientific questions are vaster.

Humanity's first truly extraterrestrial generation might not consider themselves human settlers on the Moon.

They might simply be lunar.

But this is something we'll discuss in another episode.

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Well, my gravitationally-challenged correspondents, we've reached the end of another quantum expedition into humanity's cosmic ambitions. Today we've learned that in the multiverse of lunar habitation, every human settlement exists in a superposition of "ingenious engineering achievement" and "spectacular exercise in optimistic vulnerability" until someone actually tries to live there permanently.

We've discovered that yes, technically, humans can live on the Moon. We possess the engineering. We understand the physics. We can extract water from permanently shadowed craters, convert it to oxygen and fuel, grow vegetables under LED lights, and construct pressurised habitats in ancient lava tubes.

Every breath on the Moon is recycled. Every drop of water is extracted from ice or reclaimed from waste. Every structural panel stands between human biology and an environment of vacuum, radiation, and razor sharp lunar dust.

The Moon, it turns out, is simultaneously humanity's training ground and filling station. A few days from Earth versus six months to Mars makes it the ideal location to discover whether our engineering works before we commit to somewhere truly remote. And the economics are compelling—every kilogram of water converted to rocket fuel is a kilogram we don't launch from Earth's gravity well at catastrophic expense.

But here's the philosophical bit: In attempting to live on the Moon, we're not escaping Earth. We're learning precisely how extraordinary Earth is. How improbable. How specifically calibrated for keeping humans alive without requiring constant technological mediation.

And we may be creating something unprecedented—the first generation of humans for whom "home" is somewhere they can't breathe, where Earth is not the ground beneath their feet but a luminous marble hanging in eternal night.

Whether that's profound or troubling depends entirely on your perspective. Which, as the Multiverse Employee Handbook notes, works best when installed manually at a quarter-million miles' distance.

Want to explore more cosmic real estate speculation? Visit us at multiverseemployeehandbook.com where you'll find our latest blog series: "Lunar Residential Guidelines (and: Everything That Can Kill You Between Here and There)."

And if you’ve enjoyed today’s extraterrestrial adventure, why not share it with a fellow optimistic realist? Perhaps you know someone who’s considered moving somewhere with challenging amenities and spectacular views. Spread our signal like solar wind across the lunar surface—persistent, invisible, and mildly ionising.

This is your quantum-coherent correspondent, reminding you that in the multiverse of lunar habitation, we’re all just highly-evolved primates attempting to inhabit an airless rock through sheer determination and advanced life support systems.

Commander Koenig was right about one thing: when the Earth becomes a pale blue dot from your vantage point, perspective becomes unavoidable.

Even if it requires disco style jumpsuits.