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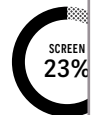
# Hakimah Abara Transformed The New Space Economy— Are Lunar Politics Next?

By Monica Waynard

Given her understated voice, it is often difficult to hear what Hakimah Abara is saying over the whirring 3-D printers and metal-on-metal hammering in the makerspace located on the edge of the Shackleton crater. But this terrestrial refugee-turned-lunar entrepreneur may well be one of the most important people in the universe to listen to.

Abara sports the same worn-out jumpsuit that seems to identify the working class of the Moon. Tigerstripe streaks of gray-colored grease and tan patches over threadbare knees and elbows mark one as here for the long term, versus the unstained mission-specific environmental suits worn by most wealthy visitors. Yet, from the China National Space Administration mechanic replacing a rover wheel to the University of Leeds scientist printing a nosepiece for a microscope, they all pause their work as Abara passes by. They cock their heads amidst the din to pick up the threads of what she's saying. In a certain way, the same could be said of

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everyone on the Moon right now—and perhaps even in the capitals of Earth’s most powerful nations.

“Madame Mayor, you too busy with your interview to help me with this?” a SpaceCorp employee asks, pointing to a stuck joint on a robotic loader the size of a large dog. Abara laughs at the quip, but then apologizes for the interruption and helps remove the joint.

“No one really calls me that,” she explains upon her return. “They’re just having some fun at your expense.”

Yet there is a certain truth in the joke, both in what Hakimah has become and the skill at which she interacts with her new constituents. During two lunar days spent with Abara, it is clear she is a natural politician. But whether you view that as an asset or a liability depends on which side you stand of the age-old political divides that replicated themselves on the surface of the Moon.

Abara’s success, both economic and now political, offers a clarion call to seemingly limitless collective opportunity in space. “There’s millennia of class, economic, race, and culture structures back on Earth that shape who people think you are and what you can do, sometimes in overt manners and sometimes in systemic ways,” she says. “It is a kind of gravity, in that it is both always there grounding us, but sometimes you just don’t think about it. But out here, we don’t have to be held back by that added weight. We have an opportunity that previous generations haven’t for centuries, to rethink and reset what is possible, not just for your own life, but for others.”



## A Different Start



### USEFUL FICTION

Useful Fiction, sometimes called #FICINT or “fictional intelligence,” is a new approach to sharing research and analysis through using the oldest communications technology of all: Story. It deliberately fuses nonfiction data and insight with narrative scenarios. The goal is not to replace the traditional government white paper or academic journal article, but to provide a new means to share their insights, in a form that audiences are not only more likely to read, but also to act upon—because narrative triggers our brains differently. If science fiction and technothrillers are like a milkshake, tasty (but not good for you), and strategy papers and trend reports are like vitamins or kale, good for you (but hard to get people to consume), think of Useful Fiction as the equivalent to a breakfast smoothie that blends the two with a purpose.

This methodology has taken off in recent years, employed by organizations that range from the U.S. Special Operations Command to Fortune 500 companies, in forms that span best-selling books to government commission reports. The following essay is intended as a “pre-read” for the Inter Astra Retreat 2022 conference, and it is hopefully a bit more enjoyable than a standard brief. This narrative—a future political journalist’s profile article filed from the Moon—shares key upcoming themes of discussion for Inter Astra, from imagining the possibilities and potential of the new space economy to questions of who will benefit from it.

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## A Different Start

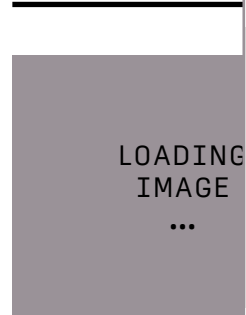
Abara was little known beyond the Moon until her surprise upset victory last month that made her Chairperson of the first Lunar Coordinating Committee (LCC). While the trillions of dollars made and then lost in asteroid mining and rare-earth mineral ventures have drawn most of the attention of the boom-and-bust of the new space economy, her story starts with something seemingly far less exciting. It is not a tale of flying beyond the atmosphere to check off a bucket list or the no-holds-barred rush to find the next deposit of tantalum, niobium, or beryllium. Rather, it is the story of what made humanity's ardent charge to develop the Moon possible.

Born in Kabul, Afghanistan, Abara left in 2021 as a young girl of 13 aboard one of the final U.S. Air Force C-17s to depart during the Kabul Airlift. Her family's first stop was a temporary refugee camp in Doha, before permanently settling in Qatar. "My experience as a refugee teenager in one new home or neighborhood or school after another was a process of constantly learning how to live your life over and over again," she said. "I used to play this game with myself where I imagined that I was an explorer on a new planet, just to make sense of so much that was new and unfamiliar." Supplementing her schooling with online courses in astrophysics, she was talent scouted by the physics department at Oxford University, where she eventually received a DPhil while at Magdalen College.

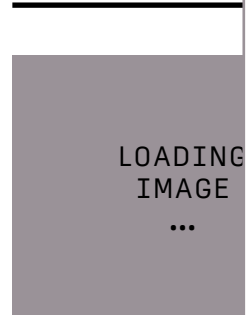
Abara first arrived on the Moon eight years ago, as a project manager at the BelleLuna launch center. She returned to Earth after two months, with a vision not of the stars, but opportunity in the dirt.

Lunar regolith—the fine dust, soil, and rock that makes up most of the Moon's surface (and coats almost every object brought there)—has no value on its own. But when formed into lunarcrete, it provides a cheap building material that can be formed in situ, eliminating the 240,000-mile supply trip from Earth. On the Moon, every ounce of material that makes that journey reflects both

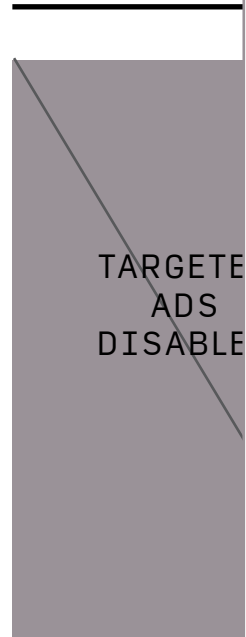
### Finding More



### What the Kabul Air Says About Today's



### Continued Access to Lunar Surface Reveals



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a calculation of exorbitant financial costs and a tradeoff between life-supporting supplies and profit-generating items. Better yet to find what you need most where you are. Perhaps even more important than economics is safety: Lunarcrete provides shielding from radiation at the same level as most metals, finally allowing humans to stay on the Moon and asteroids for the long term. Without this fundamental building block, it is unlikely humankind would have made so much commercial, economic, and now maybe even political progress, so far from Earth.

Abara named her regolith materials company, Bamiyan Ltd., as an ode to the Afghan province her parents originally came from. Bamiyan's mission is as pragmatic as its founder. Instead of chasing rare extractables, it focused on a simple solution to a need shared by all. If the space race of the last decade carries echoes of the California Gold Rush of the 19th century, Abara could be thought of as a 21st-century version of Levi Strauss. The German immigrant to America didn't chase gold like the other "49ers," but instead made his early fortune selling them dry goods and then blue jeans.

"The early story of the space economy was prestige projects funded by billionaires and the wealthiest nations on Earth," she says. Then gesturing to the activity around her she chooses her words carefully: "All of these brilliant people around us right now are living proof that the space economy turned out quite different than the people who thought themselves the smartest people on Earth believed it was supposed to."

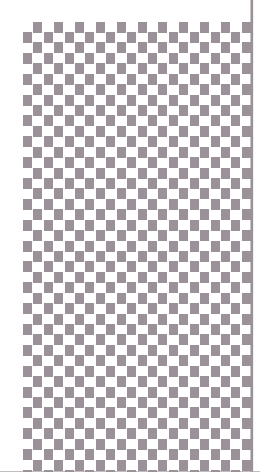
With support from a network of investors looking for something "safer" in the extremes of the space market, Abara returned to the Moon to establish one of the first regolith manufacturing facilities. The business churned out a steady flow of lunarcrete blocks—and profits. It wasn't exciting, but it was a reliable business model. "Hakimah understood very quickly what the missing pieces were to create a realistic and sustainable foundation for the lunar economy," says Lu Guo, one of the

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founding partners of OE Horizon, the Taiwan-based venture capital firm that was an early-stage investor in Bamiyan.

In becoming a supplier of a useful product needed by all—state agencies and for-profit ventures alike—Abara built relationships across the nascent lunar community that built up using Bamiyan’s concrete-like blocks. “It is funny, but I have more friends up here than I ever imagined having back home,” she says.

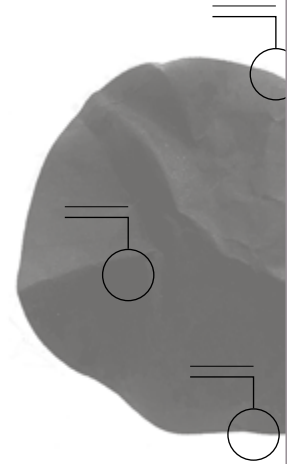
While she doesn’t explicitly mention the impact of her early transient life, she also clearly sought to create some communal roots for her and others by constructing the free makerspace building that anyone can use. The lunarcrete building is spare in design but enormous by the standards of lunar construction, the size of three soccer pitches. The only true flourish is a ceiling that shines beams of light down through green and orange glass. Even that, though, is pragmatic in a way; the glass is pulled out from the regolith during the block manufacture. The sub-millimeter-sized beads were created by the shock of meteoroid impacts on the Moon.

On weekdays, the facility houses a beehive of activity, generating new products and new ideas, as workers and designers from all backgrounds check out each other’s work and socialize along the way. On weekends, it houses a mix of concerts, a weekly classic movie series projected onto the three-story-high wall—“That’s the real power up here,” Abara says with a smile. “She who decides the movie, rules the galaxy.”—and religious services. “Open to all faiths,” Abara is quick to add. “Jehovah, God, Allah, Peace be Upon His Name. ... Whatever you call the divine doesn’t have time for all that nonsense up here.”

Then the Aitken Incident changed everything for Abara—and lunar politics.

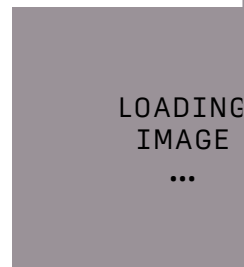


## Out of Failure, Triumph

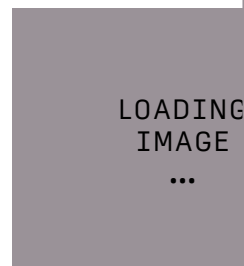


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## Out of Failure, Triumph

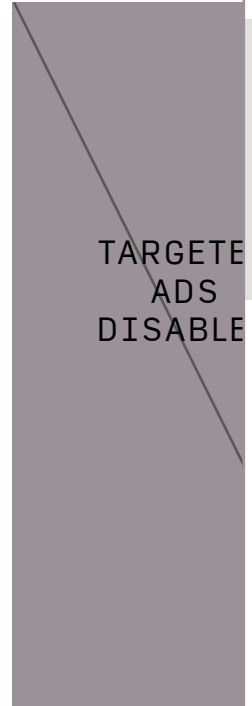
“The LCC could well be a historical hinge point, which rewrites the nation-state and corporate rules of space politics and commerce,” writes Professor Sinclair Hinton of Howard University’s Center of Space Studies in a recent study of the Lunar Coordinating Committee. “How that history plays out next is not yet clear.”

Such grand proclamations mean little to Abara, who is focused on the step-by-step process of focusing on the cornerstones of keeping the current census of 2,689 lunar residents alive. “For now, all the LCC is doing is coordinating communications and transportation plans, just the mundane and boring things that need to be done for the good of all.” But with a new budget to pay for those activities, drawn from a small fee on launch center use, the LCC may well be building a new model of governance on the Moon—and perhaps beyond. After all, the government of the United States of America started with hashing out port fees and postage stamps.

The human structures arrayed around the Shackleton crater are a far cry from the NASA Artemis and Chinese/Russian International Lunar Research Station space bases that first set up camp on the Moon, their locations determined by the discovery of lunar ice at the South Pole by the Chandrayaan-1 mission in 2008. The area has become a small city of regolith structures and the dominant hub for humankind’s activities in space, ranging from asteroid mining to solar energy to settling Mars and exploring farther out into the solar system. Last year, more than \$100 billion worth of “R and R”—research and resources—were generated by lunar- and asteroid-focused activities. Tax free, no less, though whether that continues is one of the most closely watched issues that could come onto the LCC’s docket.

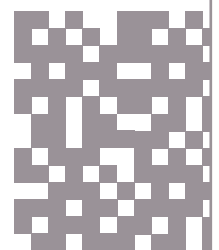
Yet, for all the optimism and fanfare of this boom, the origins of its next leap forward are in tragedy and failure on the Moon as well as on Earth. Despite billions of dollars of investment in everything from autonomous resupply rockets

Asteroid Mining Ex  
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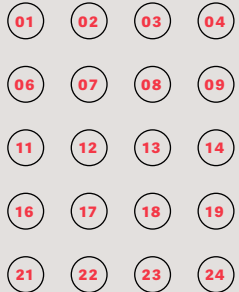
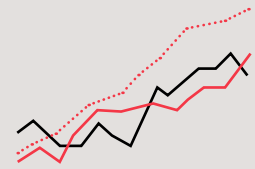
to luxurious quarters for sightseeing plutocrats, there was no true consideration of what to do should something go awry. Some of the better-funded projects and government agencies had optimistic contingency plans—"Each developed by billionaires and bureaucracy literally hundreds of thousands of miles away," Abara says. But there was no consolidated approach to search-and-rescue operations authored by those whose lives were most at risk.

Eighteen months ago, the lack of such a plan was cast in sharp relief with the tragic loss of nine scientists from a joint ETH Zurich-GeoGraphe survey mission. A navigation system error sent their self-driving rover off a 300-meter escarpment at the South Pole-Aitken Basin. Four died immediately, but five of the team initially survived the horrific crash. Yet, with no support structure behind them, nobody else on the Moon knew about the accident until their mission coordinator back on Earth began calling other mission centers after the team failed to check in. Complicating matters, this was during the USS Nomad incident in the East China Sea between the United States and Chinese military forces. The two governments had not only prohibited their citizens from engaging in any joint activities with the other side, but also jammed each other's communication satellites, bandwidth on which much of the lunar missions depended. Volunteers eventually formed an ad hoc rescue mission, but it was too late. They arrived only to find the five surviving scientists had succumbed after their supplies ran out, their last moments captured on a video that was recovered onsite.

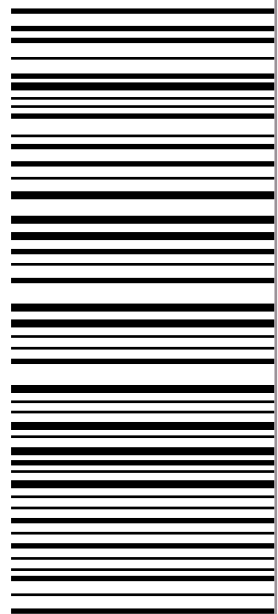
Abara was on Earth at the time visiting family who had moved to Nigeria, part of a self-imposed nine-week break from her low-G life on the Moon.

"The Aitken incident broke my heart because it showed what happens when Earth's problems become our—I mean the Moon's—problems," Abara says, now seated behind a desk whose surface is a piece of brushed titanium made from a rocket's fuselage panel that's been roughly

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hammered flat. Her informal office is spare, and she sits without her viz-glasses on. Her brown eyes well up at the recollection. "When that accident turned into a tragedy, I was back up here 36 hours later to make sure that never happened again."

Notably, Abara hasn't been back to Earth since.

### Leaving It All Behind

To understand what that challenge looked like for the subsequent campaign to bring together the disparate groups and interests on the Moon through what would become the Lunar Coordinating Committee (LCC), it is important to understand the mix of players and personalities that make up the lunar commercial, political, and cultural landscape as Abara has come to know it.

American astronauts, Brazilian astronautas, Chinese taikonauts, and nine other national missions answer to government agency heads in Washington, Brasília, Beijing, and beyond. Academic researchers come from more than 70 different universities on five different continents. And then there are the for-profit corporate mining and research operations. While many started as prestige plays for their founders, they are now viewed by investors as the key growth divisions of the very same companies that dominate so much of terrestrial business. Agricultural giants engineering new corn strains in the different gravity. Energy companies trying to be the first to transmit beams of harvested solar energy to the Earth. Software companies testing new quantum tech in already-chilled settings. Finally, there are the wildcatters, self- and crowdfunded entrepreneurs operating with the tightest of margins, literally putting their businesses and lives on the line to score a breakthrough rare-earth element or helium deposit find.

The rapid shifts in Earth's technology investment cycles, such as the recent "quantum winter" that chilled stocks in that sector, adds a further complication. "Companies who sought to support and



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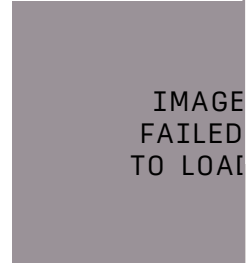
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supply the nascent lunar and asteroid industries kept getting caught in that same short-term thinking cycle as their customers," she says. "It was the same for countries like the U.S. or Brazil or China that looked at their activities as national missions. What one government leader saw as needed for their prestige, the next would see as a needless expense."

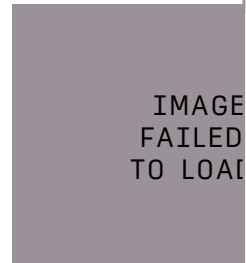
The LCC started as a modest way to provide some coordination to prevent repeats of the Aitken Incident. Yet, even there, competition mattered. Staking out mineral claims is a "winner take all" business, so each of the entities on the Moon worried about someone else winning political control. A ranked-choice voting model was ultimately agreed as the least threatening mode to select representatives to the nine-person coordinating council. It was this combination of voting rules and her own modest role within the lunar economic ecosystem that then positioned Abara to become the LCC's first Administrator, the person who would have to do the hard work of implementing decisions. Each of the competing government alliances and corporate conglomerates put forward their own preferred candidates as their first choice, canceling each other out. The humble concrete supplier to all was the most popular second choice, moving her to the top.

"A refugee turned entrepreneur beats out Big Government and Big Tech in the first space political race? It is definitely not what the leaders of the last two space races imagined!" said Jennifer Vasquez, former NASA Administrator.

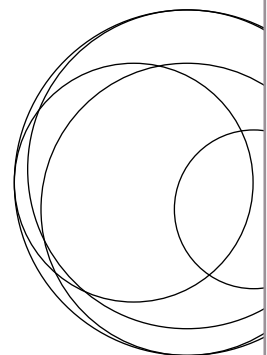
Yet Abara's success has drawn out critics. Some warily watch her eagerness to seamlessly blend politics and business as potentially risky. "Abara is more out to win than she lets on," said Warren Sahil, the former chief executive of one of the Moon's first rocket-fuel resupply companies. "And give her credit, so far, she has. But if she falters, it has real ramifications not just for her, but for confidence back on Earth in the entire lunar economy. Like it or not, there is no Moon without Earth."



Quantum Mechanic For the Lunar Home



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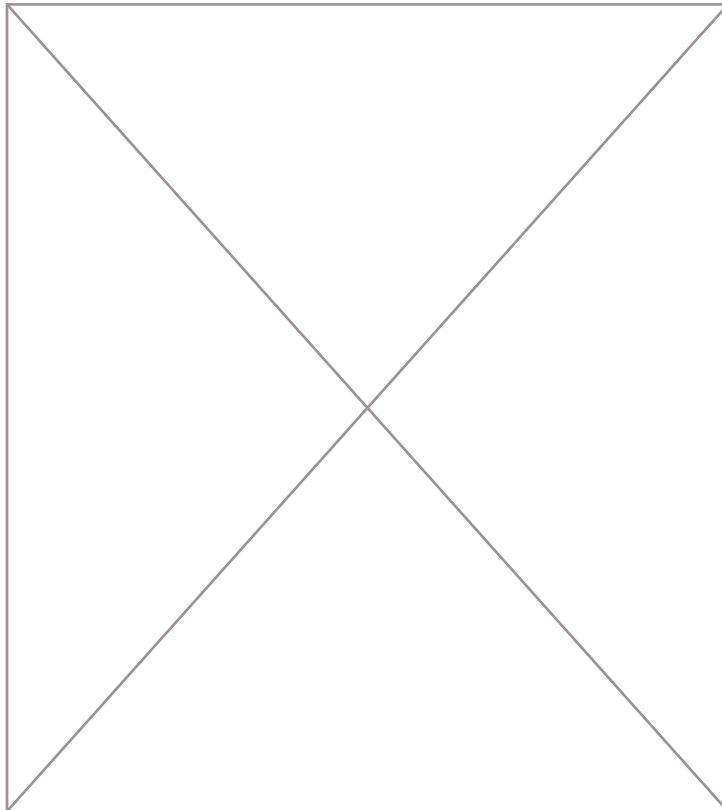
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So, what is this new kind of leader's vision for the future? Just as her regolith engineering technology involved working with what was available, Abara believes that ultimately what is needed is a simple change of perspective.

Standing atop one of her regolith structures just outside the Shackleton crater's main hub, it is clear she sees a different horizon than what is visible on Earth. Yet she hasn't lost sight of where she came from.

"We have limitless possibilities ahead of us out here. Literally limitless," she says. "I see no reason therefore for us to replicate what doesn't work or what isn't fair, just because that was the way we used to do it at our origin point. And yet, less than one percent of the people on Earth will ever leave its atmosphere. Ninety-nine percent will remain behind. They are still our family, too. So, everything we do up here also has to make life better for them."



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