Space Invader

Bigelow addresses reporters [FC CHK] in front of a space-themed mural in his company's Nevada compound.

Robert T. Bigelow made a fortune from his hotel chain, Budget Suites. Now he wants to launch a network of inflatable, modular space pods into orbit. Uses: Research, tourism . . . and making contact with aliens.

BY VINCE BEISER

A uniformed guard, his pistol holstered on his hip, waves me to a halt outside a sprawling compound fifteen minutes north of Las Vegas. On either side of the main gate, razor-wire fence stretches out into the Nevada desert. The hired gun leans inside the open window of my van, giving its contents and me a quick, professional appraisal. On his shoulder is a military-style patch. But in place of an insignia denoting rank is an oval alien head.

"Morning," he says affably. "You can just follow me."

They've been expecting me. No one comes here without an invitation—and a background check. The guard takes me into a trailer where someone else verifies my driver's license and pats me down to make sure I'm not carrying weapons "of any kind," as he puts it. For good measure, I will be escorted by an armed guard at all times while meeting with The Boss: the super-secretive, super-rich owner of the Budget Suites hotel chain,

PHOTOGRAPHS BY Gregg Segal

Robert T. Bigelow. It's easy to snicker at the James Bond theatrics at the headquarters of Bigelow's eight-year-old company, Bigelow Aerospace. It's even easier when you find out what Bigelow is doing here. He is trying to build his very own space station. An inflatable space station, to be precise—a 20-ton bouncy castle meant to expand when it gets into orbit. It will be the first privately owned destination in space, and Bigelow proposes to rent it out as an orbital research lab, a training facility, or even a tourist hotel. Sure, have a chuckle. But here's the thing: He's actually doing it.

In the past 18 months, BA has successfully shot two Hummer-sized prototypes of the station into orbit. Dubbed Genesis I and II, they're circling the globe as you read this. The last one went up in June, blasting out of Earth's atmosphere on the back of a modified Soviet-era SS-18 missile. It was launched from the central Russian space complex ISC Kosmotras, a rocket-for-hire venture run by the Ukrainian and Kazakh governments.

The Genesis prototypes are one-third-size models of the inflata-structures Bigelow plans to launch eventually. Their outer shells are made of a superstrong Kevlar-like fabric that rolls up tightly for transit and then expands to full-size in orbit. The system offers a crucial advantage over conventional spacecraft: Its smaller mass and weight make it cheaper to build and launch.

These proof-of-concept test models are doing more than just traipsing through space. On the company Web site, you can check out regularly updated photos of Earth, taken by dozens of cameras mounted on the pods 350 miles up. Genesis II sports a projection system that currently displays an image on the outside of the craft; later, Bigelow intends to

Castles in the Air

The world's first privately owned space station will be a series of daisy-chained pods. Here's how it works:

1) LAUNCH
Bigelow Aerospace used modified Russian ballistic missiles to haul two test modules into space earlier this year. But the actual units are bigger and will need heftier transport. No word yet on who will provide taxi service, but Boeing has voiced an interest, and Lockheed Martin is studying the problem. Plus, there's always a certain PayPal cofounder with rockets for rent.

2) INFLATE
Once in orbit, the module is deployed. As it unfurls, eight solar panels flower out. Then compressed air is released from tanks in a metal core, forcing the 16-inch-thick fabric skin to expand outward. Within minutes (test models inflated in a mere 15) the units reach full size—22 feet in diameter in the case of the BA 330 module, 21 feet for BA's smaller Sundancer craft.

3) ASSEMBLE
The first human-ready Sundancer pod will be launched in 2010. A spine with docking ports will join it in orbit a year later, to be followed by two, 1,080-cubic-foot BA 330 add-ons. Once the final unit locks into place, the complex will hold 15 people. Future stations will be completely customizable, and big-name clients will be invited to design their own.

ILLUSTRATION BY Rodney Fuentebella

sell ads on these exterior walls. Inside the vessels, a menagerie of ants, cockroaches, and scorpions are being studied for their responses to microgravity. There's even an onboard bingo game involving a device that randomly selects numbered balls floating around the cabin. Fans play over the Internet. Also drifting about: hundreds of photos, figurines, ornaments, mechanical pencils, ping pong balls, and other keepsakes. Before the launch, the public was invited to put such personal trinkets aboard for $295 a pop.

This peculiar mix of ambition, technical sophistication, and gimmickry tells you something about Bigelow. Even by the standards of reclusive zillionaires and would-be space entrepreneurs, the 63-year-old is odd. Take his obsession with secrecy. He's never sent an email in his life—not secure enough, he says. Neither he nor any of the 120-plus staff have office voicemail. Until a few years ago, Bigelow didn't allow pictures of himself to be printed. A framed sign in the guard trailer reads, "Keep your work and the work of coworkers very private from people outside the company."

His signature quirk, however, is an obsession with space that goes way beyond business interests. In addition to the $100 million Bigelow has already put into BA (and $400 million more he has committed), he has doled out millions to fund research of alien abductions and UFO sightings. He's done some of the work himself, personally interviewing hundreds of people who claim to have had extraterrestrial encounters. In fact, one of the main reasons he's so eager to get his stations launched is that he thinks they might provide a step toward making contact.

So it's not too surprising that when this flying saucer–chasing hotel operator started talking a few years back about building his own space stations, almost everyone laughed him off. But of all the private entrepreneurs trying to make money in outer space—a list that includes Amazon.com CEO Jeff Bezos, PayPal founder Elon Musk, *Doom* creator John Carmack, Microsoft cofounder Paul Allen, and Virgin impresario Richard Branson—Bigelow is the only one to have actually gotten something into sustained orbit. What's more, his company built a working spacecraft of flexible materials, rather than rigid metal—a feat even NASA hasn't pulled off. So these days when Bigelow talks about his plans to reach the stars, a great many people have stopped laughing and started listening.

One reason Bigelow is so eager to launch his homegrown space station is that he thinks it might help him make contact with aliens.

When I meet Bigelow inside the vast spaceship factory at his Nevada compound, he is dressed in white sneakers, dark pants, and a blue company shirt. He is lean and tall, with a Clark Gable mustache and a slightly lupine cast to his deeply lined features. Notorious for his obsession with detail, Bigelow has been known to get involved in decisions as minute as whether a strap should be enlarged an eighth of an inch. But at our meeting he comes across as a gentleman of the old school, his voice even and moderate, his manner unfailingly polite. Still, while talking about his recent successes, he allows himself a moment of triumphalism: "Some graybeards at the old aerospace companies might still be snickering at us," he says. "But not as much as a few years ago."

Bigelow is a product of Las Vegas—born, raised, and still a resident of the world's most preposterous city. That fact does not seem coincidental. Vegas is built on the proposition that if you've got the money, you can create anything you want. A scale replica of Venice, complete with indoor canals? Sure. An ersatz beach with a wave machine so tourists can body surf in the middle of the desert? No problem. A privately owned, inflatable space station? Hell, why not?

"When I was a kid, things were more unique here than any other place," he says. "They were doing above ground nuclear tests in those days. We'd watch the mushroom clouds from the playground at recess. You'd feel the earth shake."

Bigelow made his money not in the glittering fantasy realm of casinos (he doesn't even gamble) but in the solidly pragmatic precincts of real estate. After earning a business degree from Arizona State University, he returned to Vegas and, with his father's help, started buying, selling, and developing apartment buildings and motels—an easy way to make money in an eternal boomtown. In 1988, he founded Budget Suites of America, an apartment-hotel concept that offered modestly priced, furnished living spaces rentable by the day, week, month, or year. His timing was perfect: Newcomers in need of comfy but temporary digs were flocking to Las Vegas, Phoenix, and other fast-growing southwestern cities. The privately owned chain now has TKoutlets in three states and is the wellspring of a fortune reportedly in the billions. (Bigelow declines to comment on his net worth.)

But 35 years of empire-building have been just a means to an end. Bigelow acknowledges that he got into real estate because it seemed the most practical way to get rich enough to fulfill his real goal, which he committed to when he was all of 15 years old: getting humanity into outer space.

Bigelow started BA with the intention of launching a private space station in 1999, but he never publicly talked about the details of his plan until last April. His coming out party: the Space Foundation's annual conference in Colorado, a schmooze fest for the outer-space wing of the military-industrial complex. It's attended by some 7,000 officials from NASA, the Air Force, and pretty much every other federal agency having anything to do with the sky, along with their counterparts at corporations like Lockheed Martin, Northrop Grumman, and Boeing. Bigelow was one of the featured speakers. He took the stage wearing a pin-striped suit and a gold

Bigelow next to one of his 6-man inflatable orbital modules. Made out of flexible fabric, the walls of the capsule are stronger than three inches of aluminum.

tie, with a big diamond-studded horseshoe ring gleaming on his finger. Diane, his wife of 42 years, watched from the front row amid a gaggle of BA staffers, her bright orange hair piled elaborately atop her head. By that point, rumors of Bigelow's operation had slipped out, and he had started getting derisive press as the guy who was trying to build an inflatable hotel in outer space. This irritates him profoundly and was one of the reasons he finally made the company's business plan public. "We've been identified a lot as a space-hotel company. That is not the case," he told the crowd right off the bat. "Our complexes have a wide variety of uses, including space-hotel businesses—for Sir Richard Branson, or Marriott, or whomever, and we'd be very happy to talk to those folks about that. But we have an economic reach which is far beyond tourism."

BA, Bigelow says, will initially focus on courting governments and large corporations. On the government side, he hopes to market to the dozens of countries with planned or existing space agencies and astronauts but are stuck in the years-long wait for a trip to the International Space Station (Japan, for example, has been waiting four years for time on the ISS). If they've got a rocket, BA will offer them a place in orbit that can be tailored to whatever experiments or national-pride-burnishing displays they desire. As for corporations, Bigelow expects that many companies will be willing to pony up for the chance to do things in microgravity that they can't do on Earth. For instance, research suggests that, because of how molecules behave in zero gravity, it might be possible to manufacture superefficient fiber-optic cable or new pharmaceuticals in orbit. And just imagine the TV commercials Madison Avenue could shoot.

With that in mind, Bigelow expects his business customers to come from communications, biotech, health services, and entertainment. These clients will want privacy, of course, so they'll get modules separate from those rented to government types. Getaways will be available by the month or year. For an extra fee, BA will also transport back to Earth any products developed or manufactured in space. "Satellites have gone from being a novelty in 1957 to a necessity today," Bigelow declared. "That's the direction we're going. We're trying to make low-Earth-orbit destinations a necessity."

In his speech to the Space Foundation audience, Bigelow outlined an ambitious timeline. In 2010, BA aims to send up Sundancer, a module that will house three people. By 2012, the company plans to launch the first of what will be its standard, six-person module. This will link up with Sundancer to form the nucleus of the first space complex. Subsequent modules can be ganged together; the idea ultimately is to have multiple stations that can hold anywhere from six people to several dozen.

These space habitats will be more comfortable than the ISS, with private sleeping quarters, plenty of windows, and, Bigelow promised, better food. The price for staying in his complex? A mere $11,950,000, includ-

ing transportation, training, and four weeks of "hang time." Lower rates will be available for longer bookings. The company, Bigelow informed his audience, is currently accepting reservations. The terms: 10 percent down, fully refundable.

The crowd reacted with a mixture of shock and hope. "Can a real estate guy actually do this?" said Elliott Pulham, president of the Space Foundation. "Well, Bill Boeing was in the lumber business before he built airplanes. In this industry, no one knows where the next small company with a big idea will come from."

In a cathedral-sized warehouse in the Nevada compound, Bigelow Aerospace deputy program manager Jay Ingham walks me through a scale model of the station-to-be. We climb metal stairs to enter a central cabin that links three gray inflatable units, each slightly larger than a shipping container and shaped like a giant watermelon. Their 16 inch-thick skin, kept inflated by compressed, breathable air released from a tanks in a steel core, is composed of numerous layers of flexible fabrics. The first is an air bladder that keeps the craft's atmosphere contained. It is surrounded by interwoven straps that hold it in the proper shape and ensure it doesn't burst. The outermost skin is five sheets of protective shielding, made of heavy-duty Kevlar and Vectran-like materials (the company won't reveal the exact composition). Its main job is to keep the craft from being punctured by micrometeorites like a multimillion-dollar balloon. Sounds like a tall order for fabric, but the walls have more stopping power than three inches of aluminum.

The price for a month in outer space, including transportation and training? A mere $11,950,000. Longer stays qualify for a discount.

Inside, the station feels like an empty submarine. The curving walls are set with portholes, and the space is cut into three floors by interlaced fabric bands. "The modules can be configured to whatever the user wants," Ingham says. "Living spaces, experiment areas, whatever." You'll be able to float around in your shirtsleeves. Or put on a spacesuit and step out into the void for a change of scenery.

The idea of an inflatable space habitat isn't new. In the 1960s, Goodyear Aircraft drew up designs for a doughnut-shaped expandable orbital station. At one point, NASA considered using inflatable passageways to connect space modules. In fact, Bigelow's technology originated with a project called TransHab, an effort to add low-cost crew quarters to the ISS. When NASA killed that program in 2000, Bigelow bought the rights to the designs and hired more than a dozen ex-NASA professionals to put them into effect. BA technicians have since made countless modifications and upgrades, eight of which are patented under Bigelow's name—including the useful-sounding "biomass waste disposal method."

The hangar also contains the mission control area. Here, technicians at crescent-shaped desks face two banks of monitors covering a pair of walls. Some screens track the movements of the Genesis modules; others show their video feeds; and one displays the alien-head logo. Currently, BA engineers can communicate with the prototypes only during the 15-minute windows in which Genesis I and II are within range of company stations in Nevada, Virginia, Alaska, and Hawaii. BA plans to add another half-dozen outposts in the coming years.

It's an enormous undertaking. But for Bigelow, it's just the first stage of a bigger, far stranger plan.

Bigelow's grandparents were driving down an empty stretch of blacktop in the desert north of Las Vegas one night in 1947 when they saw the UFO. At first they thought it was an airplane on fire—something glowing in the sky, hurtling toward them. But it was moving much faster than an airplane, and its light filled their windshield, eclipsing the night sky. They thought they were going to die.

Bigelow pauses here in telling me this story, regarding me levelly, his hands clasped on the table. Then, he says, the glowing craft made a right-angled turn and shot off into the sky. "Our aircraft don't make those maneuvers, even today—especially at close range," he says.

Bigelow first heard this tale when he was 10. He also had an aunt and other people he knew who reported what he calls "very convincing" UFO sighting experiences. It was these stories, he says, that made reaching space his obsession. "I kept it to myself for a long time, not even telling family or friends what I hoped to do," he says. "When you actually get involved in your dreams, that's a more appropriate time to talk about them."

Years before he started building space habitats, Bigelow began looking for the truths he was sure were out there. He met with more than 230 people who claim to have had experiences with ETs. In the 1990s,

he founded and poured millions of dollars into the National Institute for Discovery Science, whose staff—which included several PhDs and ex-FBI agents—researched alien abductions, out-of-body experiences, cattle mutilations, and other paranormal phenomena. In 1997, he donated $3.7 million to the University of Nevada, Las Vegas to create a Consciousness Studies program in which students could take classes about near-death experiences and psychic phenomena. At one point, he even bought a 480-acre ranch in Utah that had been the scene of a number of UFO sightings, animal disappearances, and other weirdness, just so he could monitor what went on there.

Bigelow stresses that all of this research has been carried out with as much scientific rigor as possible. He says that he has interviewed only carefully chosen subjects—otherwise-sane people with jobs in the military or the sciences, or people who had experienced a phenomenon as a group. Wherever possible, he cross-checked their assertions with those of other witnesses and with "forensic evidence"—samples he obtained of "various kinds of organic or nonorganic substances." He also claims to have been granted access to "very confidential" information from sources he won't disclose. He won't answer directly when I ask whether he has concluded from all of this that ETs have visited our planet. Choosing his words carefully, he says: "I have an enormous amount of data from a lot of different sources that give me some pretty strong convictions about the authenticity of the existence of anomalous phenomena, such as UFOs."

In 2000, two years after he started BA, Bigelow offered a more specific explanation for the allure of space. In an essay posted to the NIDS Web site, he wrote: "I strongly believe that at least *some* UFOs owe their beginnings to being manufactured ... from materials made in a microgravity environment." The limitations imposed by Earth's gravity, he explained, leaves us with only those elements found in the periodic table; in space, we might be able to develop all kinds of new compounds with unguessable properties. Working in microgravity, Bigelow concluded, is therefore essential for manufacturing interstellar craft. "As for our UFO friends," he wrote, "we will not begin to match their early craft until we also begin to exploit space for manufacturing purposes."

But before anyone sets foot in one of his space stations, let alone starts building spaceships to help us catch up with our UFO friends, Bigelow has a long list of challenges to overcome. Is there even a market for a private space station? NASA tried getting corporations interested in its proposed Space Station Freedom in the 1980s and received only a tepid response. There are also major technical hurdles to be cleared; the craft's power supply, navigation, and life-support systems are all still in development, undergoing field tests aboard the Genesis modules. But at least Bigelow has people working on these things. He's leaving it up to others to answer perhaps the biggest question he faces: How will people actually get to his orbital complexes?

The shuttle will retire in 2010, and there aren't enough *Soyuz* capsules to go around. How will people actually get to these orbital complexes?

One obvious space ferry, NASA's space shuttle, is scheduled to retire in 2010, and it could be years before its successor is ready. That leaves the Russian space agency's *Soyuz* capsules as the only vehicles currently capable of taking humans into space, and there aren't nearly enough of them for the dozen-plus annual launches Bigelow envisions needing by 2013. To solve the problem, he is following the example of the Ansari X Prize—the $10 million award that helped inspire the development of the first privately funded rocket to escape Earth—by offering $50 million to any privately funded US company that builds a craft capable of docking with his stations. There haven't been any serious takers yet.

But Bigelow has a growing list of supporters, many of whom may be able to provide transportation service in the future. In particular, he enjoys enormous respect and goodwill among private space entrepreneurs. To them, his orbiting stations are both inspiring examples and potentially lucrative business opportunities. He has already inked agreements to work with at least two, Space Exploration Technologies and Rocketplane Kistler.

"He's got the right idea," says Lon Levin, one of the founders of XM Satellite radio who is now an executive with tSpace, another rocket startup. "There are a number of players chasing the transportation piece of space. But there are no destinations. He's chasing what should be a very profitable business."

Bigelow is also winning over a constituency in the stodgy world of established aerospace corporations and government agencies. "We're interested in partnering with him," says John Elbom, vice president of space exploration at Boeing. "There's no sense of threat, but rather an opportunity to work together." He also has an agreement with Lockheed Martin to study the use of its Atlas V rockets to get passengers to his space stations. His hobbies may raise the bureaucrats' eyebrows, but his successes have caught their attention. NASA is even talking to him about possibly building inflatable structures that could house astronauts on the moon, where the agency plans to start sending people in the next decade.

"He's got the money, the drive, and the expertise," says Pete Worden, director of NASA Ames Research Center. "I think he is going to succeed." As Bigelow would be the first to tell you, much stranger things have happened.

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