Blade Runner

Larry Neal has invented a flying motorcycle, and he wants you to try it

By Matt Pulle
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God told Moses to free the Hebrews from slavery. He wants Larry to free people from traffic. Larry Neal, a middle-aged man, says that by listening to the Spirit of God, he's on the verge of making history, giving us the Fly-Drive Vehicles of the future we were promised way back in the past. You're entirely right to scoff at Neal's ambitions. Dreams of reinventing flight often crash and burn and fade away into oblivion, but as Neal sees it, he's already gotten his invention off the ground. The question now is if he can keep it between heaven and earth.

- Allison V. Smith

Larry Neal and his Super Sky Cycle

- Allison V. Smith

"At the end of your life you have to ask yourself, did you really fulfill what God intended you to do?" says Neal.

- Allison V. Smith

You, too, can have a "flying motorcyle"--if you've got a pilot's license and $38,000.

- Allison V. Smith

"In the world of aircraft, gyros have a bad reputation. We're kind of like the bikers of the general aviation world."

- Allison V. Smith

Motoring, what's your price for flight?: Larry Neal models an unfinished Sky Cycle.

- Allison V. Smith

Neal adds style to the Sky Cycle with retro-style taillights.

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- Handlebars in the sky.
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Courtesy of The Butterfly LLC

Fly me to the moon: Larry Neal's flying motorcycle takes off quickly and effortlessly.

- Allison V. Smith

Subject(s): future cars, gyroplanes, flying motorcycle, Boyd, Texas

This story takes place in a small town in Texas that people drive through on their way to someplace far more exciting. Neal, though, came to the town of Boyd, literally just south of Paradise, and never left. He arrived here after he fled his job at his father's farm in rural Tennessee, taking off in a beat-up sedan with $400 in his pocket. He

could have kept on going—Fort Worth and Dallas are just a short drive away—but Neal found a church, a home and a job, which is all he was looking for in the first place. Once he found that, he found peace, and once he found peace, he found a way to make a motorcycle that flies.

Neal says he came to Texas directed by the voice of God, which guided him from Tennessee to Oklahoma to Fort Worth and on to Boyd. He's lived there now for 27 years in a home he built himself and where one morning God helped him figure out the first clue toward building a flying motorcycle. If you've ever driven through Boyd on a plain summer day, through a dusty downtown that couldn't lure the hungriest or weariest traveler, you might wonder why God didn't take the time to help anyone else.

Neal, though, is a deeply religious and serious man and probably wouldn't appreciate a joke about his faith or his adopted town. He reads through the entire Bible every year and doesn't drink, swear or, in his words, "run around." At 56, he's devotedly single and doesn't even think about dating. All he cares about, outside of God, is his motorcycle.

Neal doesn't read a whole lot of books besides the Bible. When he's not working on his motorcycle inside a stifling hangar at a local airfield, he's thinking about it. How can he make it land softer, fly safer, take off quicker? Neal says that he has no outside interests because he's like a warrior. When he heads off to battle, he says, "I don't encumber myself with anything more than I have to."

In a matter of months, Neal will attach a propeller and a helicopter rotor blade to his most recent motorcycle—he's already built and sold a handful of flying bikes—and take it out to a tiny airport in Bridgeport. Then he'll spin the propeller and hit the gas. When he hits 25 mph, the helicopter blade will spin up to 120 revolutions per minute, or enough to soar into the Texas sky like a leaf caught up in a breeze.

If he's so inclined, Neal can fly to Paradise and back, which is all he's ever wanted.

"At the end of your life you have to ask yourself, Did you really fulfill what God intended you to do?"

In December 2005, two days before Christmas, Neal first flew his patented Super Sky Cycle from the airfield in Bridgeport, nearly 80 miles northwest of

Dallas. At the time, the charming, folksy inventor garnered a smattering of media attention from local newspapers, television stations and aviation Web sites. Typically, Neal was treated like a novelty. As seen on TV news or on his Web site, Neal's Super Sky Cycle looks like something someone threw together in a backyard, full of homespun charm and ingenuity.

But Neal's invention does fly, and it is a motorcycle you could drive to the corner store. As odd as it looks as it glides parallel to the ground, you'll find aviation experts who think this self-described hillbilly is onto something. A few people here and there claim to have invented a flying motorcycle too, but Neal is the clear leader of the pack. He makes them, flies them and sells them. With the aw-shucks practicality befitting a country boy, Neal has added devices and features that seem to help his three-wheeled bike handle the stubborn incongruities of traveling the skyway and the highway.

"I applaud his inventiveness," says Charles Reinholtz, a department chair at Embry Riddle Aeronautical University. "He definitely has something that works."

There are others, however, who are more dubious and say that Neal has just recycled an old, discredited idea. They're not entirely wrong. Like many inventors, Neal isn't creating something out of thin air. His flying motorcycle is actually an update on a forgotten aircraft called a gyroplane. Resembling a tiny, makeshift hybrid of a propeller plane and a helicopter, the gyroplane fell out of favor more than 50 years ago as it fell to the ground after the slightest gust of wind. Today, only hobbyists fly the aircraft, which has a propeller on the back to drive it and a pair of free-spinning helicopter blades on top to lift it into the air.

But for all its faults, the gyroplane's principal advantages—it's rather light, compact, inexpensive and easy to take off and land—gave Neal the idea that it could double up as a motorcycle, if not one day a car.

Twenty or so years ago, Neal says, he realized that the trick to inventing a flying car was not to try to make a car fly but make a gyroplane drive. On a small scale, Neal's done that. He's already sold five Super Sky Cycles and has plans to sell 30 more. He's even working on a fully enclosed two- and three-seater. But Neal has a far loftier ambition. Hoping to become the "Henry Ford of Flying Cars," Neal says that his flying vehicles will take over the sky a lot sooner than you think.

"Fifteen years from now if you don't have a flying car," he says matter-of-factly over lunch, "you'll be the odd person out."

Neal is a probably a better inventor than he is a prognosticator. There are all sorts of obvious reasons why his vision may never come true, not the least of which is that few people would be willing to trade in their SUV for a three-wheeled motorcycle with a rotor blade whizzing above them. Of course, if you doubt Neal—and there are many who do—he doesn't particularly care. He'd rather work on his bike than talk about it anyway. Day after day, often with nothing but the distant hum of traffic on Route 380 to ease the silence, Neal labors quietly and alone in a spacious airplane hangar at Bridgeport Airport, making and fine-tuning flying vehicles. Whether he'll be successful on the scale he imagines is an open question, but if he fails, it won't be for lack of effort. And it certainly won't be for lack of faith.

"I'm never nervous," he says about whether his dream will take off. "When it's what God has given you to do and you're taking one step at a time in fulfilling your mission of building the flying cars of the future—it's an excitement I can't explain."

If Neal realizes his vision on its grandest scale and a movie is made about his life, there are any number of childhood scenes that can play over the opening credits. You could start with young Larry placing wings on his soapbox car. Or show an enchanted kid watching a plane fly over his house in East Tennessee and tracing it until it fades into the sky. Or depict him with a towel wrapped around his neck jumping off the porch and pretending he was Superman.

Though Neal was intrigued with flight at a young age, it looked as if he were grounded for life as he approached 30 and found himself still stuck at home in Crossville, a hard-luck town on a bluff between Nashville and Knoxville. Although he attended a state college for mechanical engineering, Neal couldn't find any good jobs in East Tennessee and settled for milking cows on his dad's dairy farm, taking home $200 a week. Neal was desperate for a way out.

"I prayed to God, 'If you get me out of this pit, I'll read the Bible.'"

And that's exactly what Neal did. "I devoured God's word," he says. He didn't just read the good book, he had it playing over the speakers in the barn as he milked his father's

cows. Soon after, Neal says that he heard the "spirit of God" answer his wish. The spirit led him to a religious gathering in Tulsa and then directed him to Texas and then propelled him to Fort Worth. The voice of God, as least as it's heard by Neal, is a rather literal one, with a surprising familiarity with the American Southwest.

As the spirit continued to guide him west, Neal came upon a white building on a hill. He knocked on the door and realized it was a church. The pastor answered, and Neal asked him if he had a room. The pastor asked him if he played a musical instrument, and Neal told him, in his East Tennessee accent, he played the "geetar." The pastor led him to a room down the hall, and the new Texan became a song leader in the church choir.

Neal got a job painting houses and soon after learned how to build them. After he moved out of the church and into a mobile home, he built a place of his own where he still lives today. From 1985 till 2003, the man who came to Texas directed by the voice of God worked as a custom builder, making good money at a job he enjoyed.

But Neal couldn't shake the dream of flying. In the late '70s, to pay his college expenses, he was working his third summer for the Southwester Company of Franklin, Tennessee as was sent to Fort Worth Texas selling books. By chance, he heard that a Dallas police officer was selling a gyroplane and wound up purchasing it for $800. He read books on how to fly it, and when he was ready, he attached his new aircraft to his car and his brother pulled him like a kite. A thumbs up was Neal's signal to speed up; a thumbs down meant to back off. Once he got the 20-foot copter blades moving, Neal was airborne.

Neal made it 15 feet off the ground, about 5 feet higher than the rim of a basketball hoop. He received a special pilot license after a Federal Aviation Administration representative watched him take off and land three times. After he took it home to Tennessee, he flew it high over the hills and valleys of the Cumberland Plateau. In 1978, he built his own gyroplane with the engine of a Porsche and soared 3,000 feet into the air.

By 1985, after Neal had begun his career as a homebuilder in Texas, he had a revelation that defines his life today. His beloved gyroplane, long dismissed by aviation aficionados, could function as a road vehicle. He knew it could be done. He

just had to figure out how. Mainly, he had to think of a way to fold the rotor blades and disengage the propeller.

For years afterward, Neal would work with and fly gyroplanes on Saturdays, figuring out how to make them safer and more reliable in the event of pilot error or a sharp, sudden gust of wind. He also traveled across the country, flying this strange-looking aircraft at experimental air shows. Among the devoted, obsessive enclave of small rotorcraft enthusiasts, Neal developed a reputation as a leader.

"In the world of aircraft, gyros have a bad reputation," says Robert Fiveson, a gyro pilot in Virginia. "We're kind of like the bikers of the general aviation world. We're perceived to be outside the norm, we're bad boys and risk takers. Larry is trying to legitimize the sport. So, yes, Larry is respected."

In 2003, with money in the bank and a plan in his head, he flipped his job for his passion for flight. Most people would admit to some trepidation as they dumped a well-paying job for a daring and adventureous dream, but not Neal. For a man whose work is governed by the rigid parameters of engineering and aerodynamics, it seems odd that his outlook is guided exclusively by a voice in his heart.

"The spirit of God has shown me I'm going to be building and designing the flying cars of the future," Neal says. "I don't worry about dying. Fear is not a part of my life. Faith is."

If you've never seen a gyroplane fly, think of the iconic scene in the movie *E.T.* when the harmless alien and his young friend Elliott ride their bike until it floats into the sky in front of the full moon. Elliott pedals the bike furiously through the streets of suburban California until, after gathering enough speed, E.T. lifts it through the air via his mysterious alien powers. The bike takes off gradually but effortlessly, as it floats through the air not with the speed of a plane or the ascension of a helicopter, but like a slow-moving, deliberate aircraft, pulled along by an invisible chain.

More or less, that's how a gyroplane appears as it flies, with or without E.T. in the passenger seat. Gyroplanes, which look a bit like a futuristic soapbox car, are powered by a spinning propeller in the back. As the vehicle gathers speed on the ground, air rushes through the rotor blades, causing them to spin. When the gyroplane hits a

certain speed on the ground, which can be anywhere from 25 to 40 mph, the blades start rotating fast enough to lift it into the air. The propeller, meanwhile, provides the thrust to push it forward. The gyroplane is guided like an airplane with a stick and rudder.

Unlike a helicopter, a motor does not spin the gyroplane's rotor blades. Natural air currents do that. As a result, the aircraft lifts into the sky rather slowly and smoothly, like an egret taking flight from a lake. People who fly gyroplanes can barely describe how majestic it feels to take off and float hundreds, if not thousands, of feet into the sky. A joystick can change the tilt of the rotor blade, forward and back and side to side.

"When you get up, you don't feel the speed at all," says Jennifer Gilmore, who works for the Popular Rotorcraft Association in Indiana. "You are just floating with the birds."

The gyroplane itself is a rather odd-looking vehicle. Some appear rather primitive and clumsy; others stylish, sleek and yet still strange. The gyroplanes that Neal makes and sells look, well, incredibly cool. There is no other way to describe them. They're simultaneously anachronistic and futuristic.

In fact, there was a time when gyroplanes seemed on course to be the aircraft of tomorrow. In the '40s, the U.S. Postal Service used gyroplanes to deliver the mail from one post office to another at a handful of cities in the Northeast. Kit manufacturers advertised them in the pages of aviation magazines. But the evolution of the helicopter more or less pushed the gyroplane to the brink of extinction. Not as fast as a plane and unable to hover like a copter, the gyro was, for want of a much better analogy, neither fish nor fowl. In their early days, especially, gyros were dangerous, particularly to those who thought they could build flying machines from a kit in their backyard.

Today, a small, likable community of hobby fliers avidly chat about gyros on Internet message boards as if they never fell out of fashion. But the craft serves no practical purpose, and in the wrong hands, it can still be a deathtrap. Neal lost a friend in a crash, and he survived a close call some time ago. He'd rather not talk about that, though.

For the better part of the last decade, Neal has tried to address the hazards of flying a gyroplane. Even before he introduced his Super Sky Cycle, the Tennessee native worked to make the aircraft more stable and, thus, safer. He played around with the geometry of the aircraft so that the thrust line of the propeller is a tad below the center of gravity. In theory, that makes the craft less likely to dip or flip off course in the event of a sudden gust of wind. On his gyroplanes, Neal also has a horizontal stabilizer, sort of a fixed wing on the rear designed to steady the aircraft in case the nose pitches up or down.

There is a long-standing debate on whether these types of innovations really make gyroplanes safer. Some fliers will tell you that in the event of sudden turbulence, when a gyroplane, without the weight or stability of a fixed-wing aircraft, is most at risk, the best preventive measure is an experienced pilot. But even if this matter remains unresolved, Neal has etched a name for himself by trying to modernize the antiquated aircraft. One impressive thing he's done is just make them easier to land. Footage on Neal's Web site (thebutterflyllc.com) shows how his gyroplanes can drop on a dime as softly as a Ping-Pong ball falling on a pillow.

"He's made significant contributions to the safety of the gyroplane," says Rusty Nance, president of the Popular Rotorcraft Association. "He was one of the key players in changing the attitudes of gyroplanes by improving design, making them more forgiving...and making it an easier craft to fly."

On a Sunday morning a few years ago when Neal was lying in bed, he saw a double-jointed rotor blade appear in his mind's eye, as vivid as the image on a television screen. He moved to the kitchen table and drew out a diagram. From there, Neal figured the best way to fold the blades of the gyro after it lands, easing its transition into a ground vehicle. For Neal, that was perhaps the most important step in his invention of the flying motorcycle, and as you might have guessed by now, it was inspired every step of the way by an all-knowing and very mechanical being. the Spirit of God.

"I was talking to God just like I'm talking to you now," he says.

Caught, by its very nature, between heaven and earth, an aircraft has to balance two competing elements: It has to be strong as possible and as light as possible. Different aircraft focus on one element at the expense of another. A gyroplane works solely

because of its weight. A tiny propeller and a pair of rotor blades couldn't exactly lift a passenger plane.

So when Neal adds weight to a gyroplane by giving it the elements of a motorcycle—wheels, handlebars, brakes and aluminum beams, Neal's Super Sky Cycle, at 600 pounds, is around 150 pounds heavier than a normal gyroplane. To compensate for the added weight it has a far more powerful engine. But Neal has also done everything he can to make his aircraft as aerodynamic as possible.

On all three motorcycle wheels, he has a finned fiberglass wheel pant that serves as a fender and looks like a giant teardrop. This helps the wheel cut through the air, and while on the ground, the wheel pant prevents the tire from kicking up dirt on the driver. Just about everything else on Neal's bike is aerodynamic, including the sleek rearview mirrors that dip off the handlebars, and the nose of the craft, which is as sharp as a plane. For style and function, he also has '50s-style taillights that can slice through the air in flight and look rather sublime on the road. Finally, Neal employs lighter scooter tires, instead of motorcycle ones.

The beams on the Sky Cycle are made of aircraft aluminum, which is both strong and light. So are the bolts, which bend but don't break.

Perhaps the biggest impediment to driving a rotorcraft on the road is what to do with the back propeller. You can't exactly have a vehicle on the street with an unprotected propeller in the rear, spinning dust and debris on other drivers. But Neal gets around this by using a variable speed transmission that turns the propeller on and off while driving the back tires. This isn't necessarily rocket science, but it's closer than you might think.

Professor Reinholtz at Embry Riddle reviewed footage of Neal flying, available on his Web site. He also reviewed Neal's U.S. patent for his fly-drive vehicle, which includes schematic drawings of the Super Sky Cycle. Although Reinholtz wonders whether it will have widespread appeal, he's impressed with many of the aircraft's features, particularly how Neal's enabled it to switch from the air to the road.

"He clearly has something that's different than what's been done in the past," he says. "I think he's on to something."

Neal doesn't want his Super Sky Cycle to be just a curiosity. Since he first flew it a year and a half ago, he's been refining it to address obvious questions about its practicality. He sized it small enough to slip into a garage and narrow enough to fit in a lane of traffic. He has a pre-rotator device that spins the blades as you prepare for flight. That enables the Super Sky Cycle to take off rather quickly, within three to five seconds.

Once airborne, Neal's aircraft will fly well over 100 mph and as lofty as 12,000 feet, nearly as high as a Cessna. The Sky Cycle has stabilizing features designed to keep it horizontal in the event of unexpected turbulence. He says that if you already have a pilot's license, you'll only need 10 hours of additional instruction before you're ready to take flight.

After the Sky Cycle lands, you can fold away the rotor blades in three minutes, or about as long as it might take to put the top down on an old, rickety convertible. Then you can hit the motor running and head out on the highway. Born to be mild, at least as Neal sees it.

"I've made it very docile to fly."

The newer designed modern gyroplanes are still paying for the sins of their poorly designed predecessor. Doug Blank, a business consultant who lives just north of Salt Lake City, Utah, has flown gyroplanes 2,000 feet above the ground. He says that the aircraft is surprisingly safe; if you're an experienced pilot you can keep the thing stable, and in the event of engine failure, the naturally spinning blades will slowly drop you to the ground. And Neal's gyros are particularly advanced, he notes, designed to keep the light aircraft horizontal and stable in the event of a landing.

Blank recently sold some land to get the $38,000 he needed to buy the kit for the Super Sky Cycle. His family, of course, was nervous, but Blank spent some time researching Neal and his new aircraft, interviewing people who knew him and had bought his gyroplanes. Everyone told him that they liked the aircraft and that Neal was easy to work with. If they needed help on a technical issue, they'd just call and he'd be there to help.

"I didn't run into anyone who had anything bad to say about him," Blank says, adding that everyone thought Neal was an "honest and ethical man."

That's kind of what you want from someone building a flying motorcycle.

On a Thursday afternoon in June, Neal is fitting a giant fiberglass wheel pant over the tires of his Sky Cycle. When he has the measurements just right, a local artist will paint a flame along the outside, making it look like some sort of space-age hot rod. Neal is not just about the spirit, he's about style.

As Neal refines his Super Sky Cycle, he can expect more publicity. A producer from the *Late Show With David Letterman* has asked him to be a guest. Neal told them he wasn't ready just yet, but give him a few more months until he's ready to unveil the updated, stylish version of his earlier Sky Cycle. He gave the same answer to a news crew from South Korea. Neal wants just a little more time in his hangar to get everything just right.

Of course, with the increased attention will come more scrutiny, competition and criticism. If he understands that, he doesn't seem to care. It doesn't seem like anything can trouble Neal, at least not since the day he left his father's farm on nothing more than a wing and a prayer.

"I really have no worries," he says. "Do I look like I have worries?"