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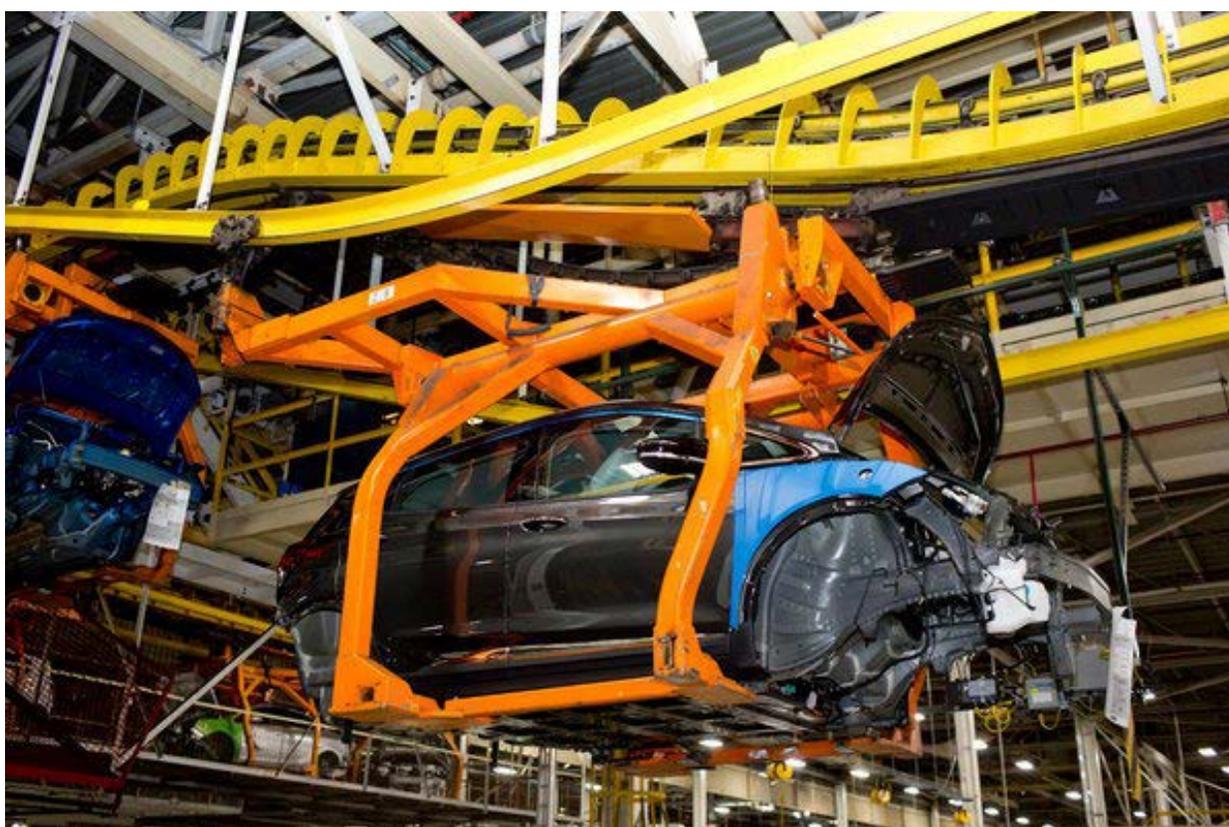
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How Did G.M. Create Tesla's Dream Car First?



General Motors produces the Bolt EV at its existing production system at the Orion Assembly plant outside of Detroit.

LAURA MCDERMOTT FOR THE NEW YORK TIMES

SEPTEMBER 14, 2016



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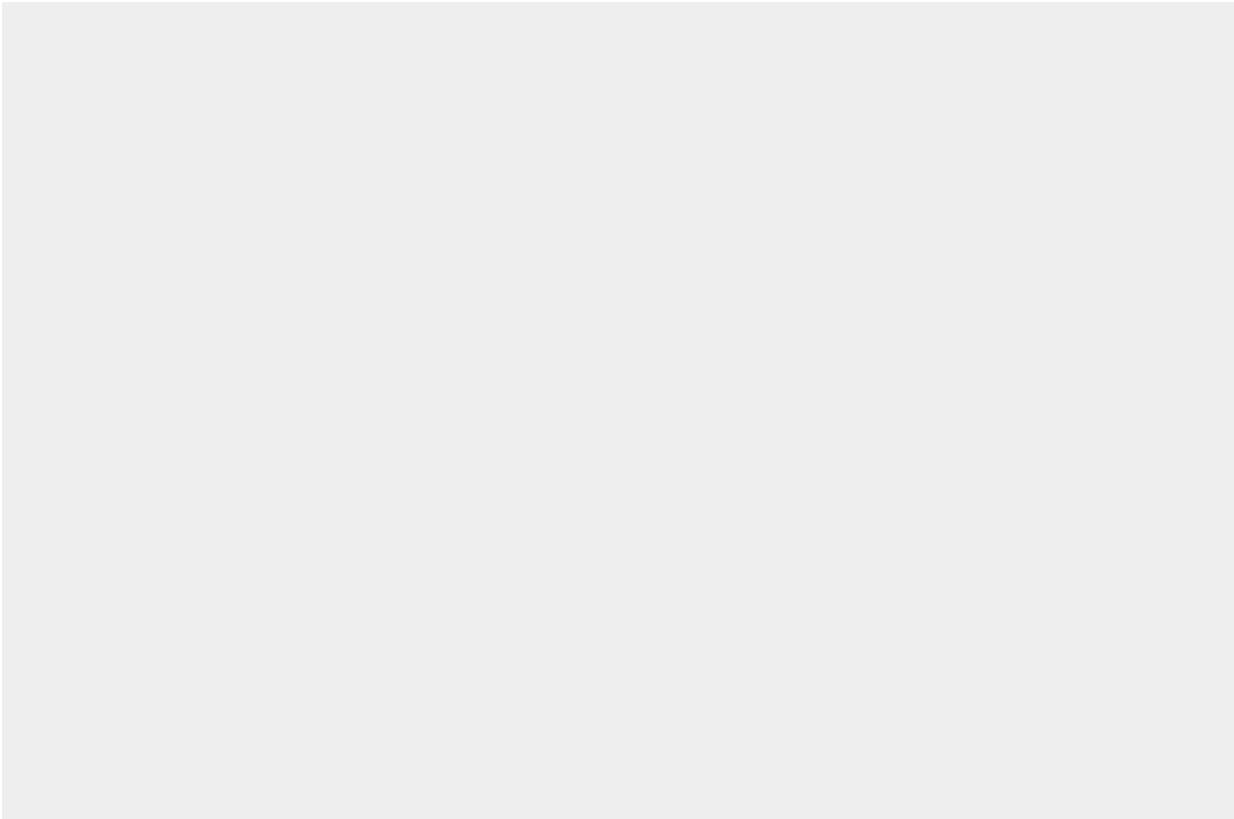
ORION TOWNSHIP, Mich. — Ten years ago, a little-known tech entrepreneur named Elon Musk published [a secret master plan](#) for Tesla Motors, an ambitious electric car start-up he had funded.

Revolutionary technologies always start as impractical and expensive, Mr. Musk explained, so Tesla's first car would be a two-seat roadster that sold for \$110,000. But by plowing profits from that car into

research and production capacity, Mr. Musk promised that Tesla would quickly create a series of cheaper cars in higher volumes, all toward an almost mythical aim: creating a long-range electric car that could travel more than 200 miles on a single charge, but that cost less than \$40,000 for the privilege.

This year, Mr. Musk's white whale — a car that will get 238 miles per charge, and will sell for about \$30,000 after a federal rebate — will finally make it to the roads. Mr. Musk's master plan has gone exactly as he promised, except for one tiny hitch.

A first affordable long-range electric car, which I drove last month and which blew my mind, is not a Tesla. I had to fly from Silicon Valley to Detroit to drive it because the vehicle was invented not by a celebrated start-up, but by that hoariest cliché of tarnished American manufacturing glory, Chevrolet, which is owned by General Motors.



Darin Gesse, the G.M. product manager for the Bolt, says the car has "a lifestyle focus, and it's not just a commuter car."

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The car is the [Chevy Bolt EV](#), a squat, wedge-shaped compact hatchback. It is an important car for G.M., and, in a larger sense, for the traditional auto industry. It demonstrates the seriousness with which automakers are taking the threat posed by start-ups that are promising to alter everything about the car business. Not only is the Bolt the first inexpensive long-range electric on the road, but it will also function as G.M.'s platform for testing new models for ride-sharing and autonomous driving.

The Bolt is also proof that, in the car industry, size matters — that even if they may be slow to come around to the latest tech, big automakers can alter the car business even more radically than Tesla has, purely as a function of their bigness.

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Mr. Musk, the chief executive of Tesla and SpaceX, has made a habit of embarrassing his naysayers, but there are increasing signs that his little car-company-that-could is nearing the limits of its potential. This spring, Tesla unveiled its own low-priced car, the [Model 3](#), which will sell for just under \$30,000 after a rebate, and will go 215 miles on a charge, which is less than the Bolt. About 400,000 people have paid \$1,000 to get on the waiting list for the vehicle, which Tesla says will begin shipping to customers in late 2017.

But few industry analysts think Tesla will meet its production goals, and the very fact that there is a waiting list highlights its fundamental hardship. Tesla paved the way for the broad acceptability of electrics, but the Model 3 is, at this point, merely a concept car. G.M.'s Bolt goes on sale this year, and the company will probably be able to make enough to satisfy everyone who wants one.

It's a delicious irony: Cocky billionaire makes grand promises in a blog post. Ten years later, he gets his wish, in the worst way.

STUART GOLDENBERG



Before we get to the Bolt's implications, let me describe the car. Most of the lower-priced fully electric cars on the road today — vehicles like the Nissan Leaf, the BMW i3 or Volkswagen e-Golf — are afflicted with a problem that is a nonstarter for many Americans. They get, at most, around 100 miles per charge. That is enough for a lot of people to get to work and back, but not enough to let them feel entirely comfortable about it.

At the other end of the spectrum are Tesla's luxury rides, the Model S and Model X, which each get more than 200 miles per charge, enough to put to rest any range anxiety. But relief comes at a cost. After federal rebates, the S starts at \$66,000, and the X starts at \$74,000.

The Bolt isn't a luxury car. It's surprisingly spacious inside (it could easily

accommodate two car seats for my children) and has a nicely designed touch-screen infotainment panel. But it looks and largely drives like a generic compact car. What is revolutionary about the Bolt is that it bridges category distinctions — it brings luxury car electric range at mass-market prices. In fact, it beats the luxuries. In their cheapest configurations, every Tesla gets a lower range than the Bolt.

“Normally for electric vehicles we talk about going from point A to point B and back to A,” said Darin Gesse, G.M.’s product manager for the Bolt. “This car is designed to go from A to B to C to D and back to A, so it has more of a lifestyle focus, and it’s not just a commuter car.”

How did G.M. create Tesla’s dream car first? [There is a lot to it](#), as I saw on a tour of the company’s Bolt operations. G.M. started building one of the world’s most advanced battery testing facilities in 2008, around the time the company faced imminent death after the financial crisis. The car that emerged out of that research, the plug-in hybrid Chevy Volt, can be said to have literally saved the company. The Volt was frequently held up as evidence of G.M.’s creativity by politicians who favored a bailout of Detroit. President Obama, who led the successful rescue, said in 2012 that [he would buy a Volt after he left office](#).



Parts of a Bolt battery in a lab at the General Motors Technical Center in Warren, Mich.

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Most of G.M.’s advantages come down to size and operational efficiency. Tesla has had to build a huge factory to produce the Model 3’s batteries at scale. G.M. batteries are being outsourced to the electronics giant LG Chem. Tesla has had to retool a car-making facility in Fremont, Calif., for its own purposes, while G.M. is tapping into its existing production system. At the company’s Orion Assembly plant outside of Detroit, I saw Bolts on the same line as gas-powered Chevy Sonics and Buick Veranos. Robots and workers seamlessly shifted between the Bolt and more traditional cars as if nothing was different.

Finally, G.M. enjoys the regulatory advantage of producing a fleet. Because the high-mileage, zero-emission Bolt helps the company stay under the federal government’s fuel-economy standards, it perversely allows G.M. to keep selling more profitable, gas-guzzling cars, like [the Tahoe S.U.V.](#) As a result, G.M. could lose money on each Bolt and still find the overall project valuable to its bottom line.

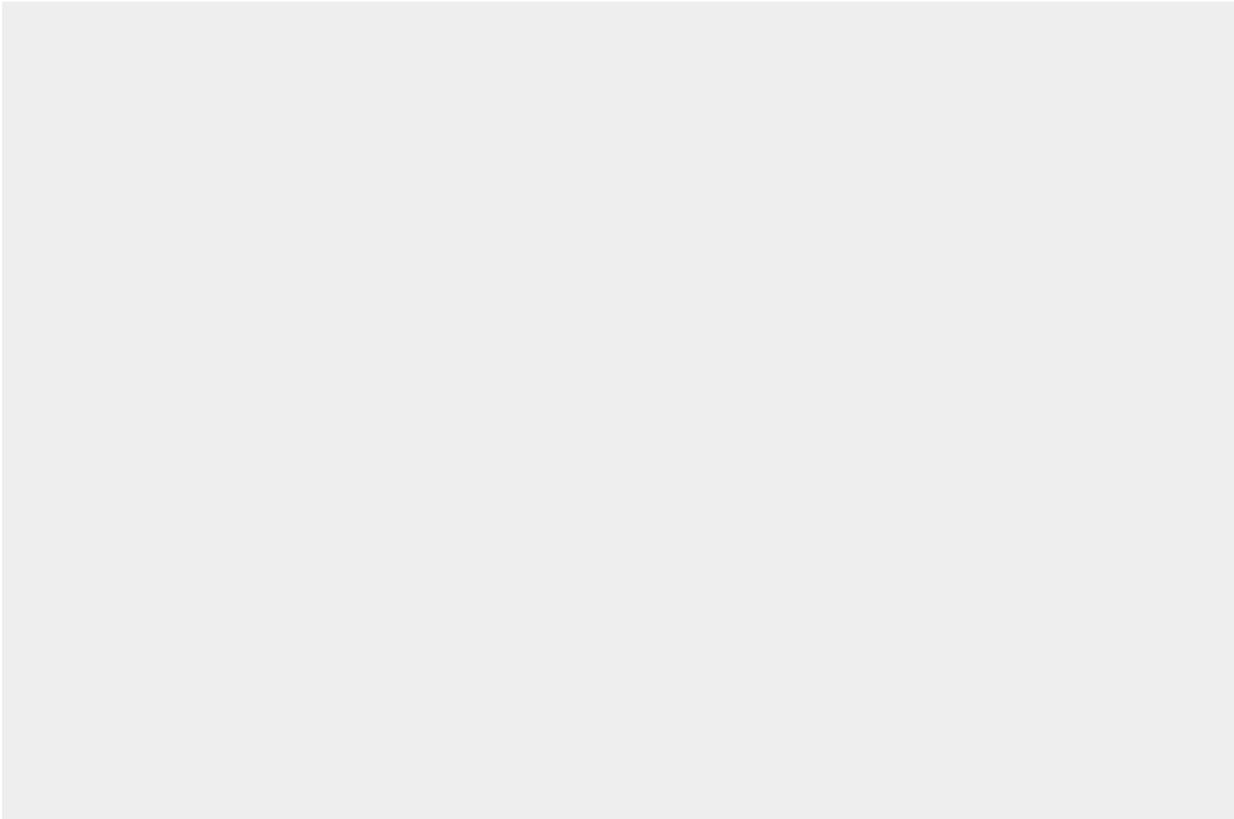
Can Tesla compete with these advantages? Tesla fanboys (they exist) might point out that the Model 3 will have some luxury appointments that the Bolt lacks, including the option to upgrade to Tesla’s semiautonomous driving system, and access to the company’s network of quick-charging stations. Tesla also has brand

cachet and exclusivity that elude Chevy. And when its battery factory is running at scale, it should be able to produce batteries at a lower price, bumping up its profitability.

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Tesla declined to comment for this article, but analysts I spoke to are skeptical of its plans. One question is whether Tesla will hit its production goals. The company made about 50,000 cars in 2015, and it is on track to produce about 82,000 this year, despite some recent setbacks.

Though [Tesla has frequently missed Mr. Musk's targets](#), he has again promised [big production increases](#) in the coming years. Tesla is aiming to make 100,000 to 200,000 cars in 2017, and 500,000 in 2018. But the company is [running out of cash](#), and [investors have been miffed](#) by Mr. Musk's hasty plan to buy out his solar panel company, SolarCity.



Under the hood of a Bolt. General Motors started building one of the world's most advanced battery testing facilities in 2008, about the time that the company faced bankruptcy.

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Another worry is that Tesla will hit its production targets, but only by skimping on quality. Over the last few decades, in a project first started by Toyota, global car manufacturers have greatly reduced defects using production systems that let workers slow down the line when they spot mistakes. Edward Niedermeyer, an analyst who edits the industry site [Daily Kanban](#), said Tesla has departed from those methods to speed up its line.

As a result, its cars have been afflicted by poor reliability. Last year, [Consumer Reports stopped recommending the Model S](#) after a survey showed that customers' cars were plagued by squeaks, rattles, leaks and various other problems.

"If you don't have quality right, you start building cars really quickly, and then a defect happens, and you can't stop yourself from producing hundreds or thousands of defective vehicles," Mr. Niedermeyer said.

G.M. has of course had its own [share of defects](#). But its history of building a lot of cars mostly well may be a leg-up over a quickly growing start-up.

"We have 108 years of manufacturing know-how," Pam Fletcher, G.M.'s chief electric vehicles engineer, told me. "This is what we do."

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