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Mexico: The New China

By CHRIS ANDERSON

SAN DIEGO

IN November I quit my job as the editor of Wired to run 3D Robotics, the San Diego-based drone company I started with a partner as a side project three years ago. We make autopilot technology and small aircraft — both planes and multirotor copters — that can fly by themselves. The drones, which sell for a few hundred bucks, are for civilians: they don't shoot anything but photographs and videos. And they're incredibly fun to build (which we do with the ample help of robots). It wasn't a hard decision to give up publishing for this.

But my company, like many manufacturers, is faced with a familiar challenge: its main competitors are Chinese companies that have the dual advantages of cheap labor and top-notch engineering. So, naturally, when we were raising a round of investment financing last year, venture capitalists demanded a plausible explanation for how our little start-up could beat its Chinese rivals. The answer was as much a surprise to the investors as it had been to me a few years earlier: [Mexico](#). In particular, Tijuana.

Like many Americans, until recently, when I heard "Tijuana" I thought only of drug cartels and cheap tequila. "TJ," though, is a city of more than two million people (larger than neighboring San Diego), and it has become North America's electronics assembly hot spot: most of the flat-screen TVs sold in the United States, from companies like Samsung and Sony, are made there, along with everything from medical devices to aerospace parts. Jordi Muñoz, the smart young guy who had taught me about drones and then started 3D Robotics with me, is from TJ — and he persuaded me to build a second factory there to supplement the work we were doing in San Diego.

Shuttling between the two factories — in San Diego, where we engineer our drones, and in TJ, where we assemble them — I'm reminded of a similar experience I had a decade earlier. In the late 1990s and early 2000s, I lived in Hong Kong (working for The Economist) and saw how that city was paired with the "special economic zone" of Shenzhen across the border on the Chinese mainland in Guangdong Province. Together, the two created a world-beating manufacturing hub: business, design and finance in Hong Kong, manufacturing in Shenzhen. The clear division of labor between the two became a model for modern China.

Today, what Shenzhen is to Hong Kong, Tijuana is becoming to San Diego. You can drive from our San Diego engineering center to our Tijuana factory in 20 minutes, no passport required. (A passport is needed to come back, but there are fast-track lanes for business people.) Some of our employees commute across the border each day; good doctors are cheaper and easier to find in TJ, as are private schools, although it's generally nicer to live in San Diego. In some ways, the border feels more like the notional borders of the European Union than a divide between the developed and developing worlds.

And it's not just TJ. To the east, in Juárez, Dell computers are built by [Foxconn](#), the company that manufactures more than 40 percent of the world's electronics (including Apple's iPhone and iPad). To the south, in Querétaro, a factory builds the transmissions that General Motors installs in its Corvettes. The design of General Electric's GENx turbine jet engine and the production of interior elements of Boeing's [787 Dreamliner](#) also happen in Mexico. Manufactured goods are the country's [chief export](#), with private investment in this sector among the highest in the world.

The notion that Mexico offers only cheap labor is just plain off the mark. Mexico graduates some [115,000 engineering students](#) per year — roughly three times as many as the U.S. on a per-capita basis. One result is that some machine specialists are typically easier to find in TJ than in many big American cities. So, for that matter, are accountants experienced in production economics and other highly skilled workers.

What all these pieces add up to is a model — one that might hold the long-sought answer for how American manufacturers can compete with those in China, India and the next generation of economic powerhouses. That's because the TJ template isn't so much about outsourcing as it is quicksourcing. And that's also the way to create thousands of good jobs in the United States.

As any entrepreneur can tell you, the shorter and more nimble a supply chain is, the better.

First, a shorter supply chain means that a company can make things when it wants to, instead of solely when it has to. Strange as it may seem, many small manufacturers don't have that option. When we started 3D, we produced everything in China and needed to order in units of thousands to get good pricing. That meant that we had to write big checks to make big batches of goods — money we wouldn't see again until all those products sold, sometimes a year or more later. Now that we carry out our production locally, we're able to make only what we need that week.

Second, there's less risk. If we make an error in a design, we've wasted at most a few days' worth of production. If there's something wrong in the production process itself, we can spot it fast. We control the component inventory, so we can see what's going into our goods and know that we're not being ripped off with used or pirated parts. And if we want to protect our intellectual property, we can do so without having to trust that other companies will uphold our interests above all others. And that's saying nothing about political risk, environmental risk or P.R. risk, all of which companies like Apple and Walmart have learned about in China the hard way.

Third, it's simply faster. We still order some parts from China, and even though we use FedEx, it always seems to take weeks, and sometimes months, longer than we'd planned. That's not a criticism of China; it's merely intrinsic to any arm's-length relationship between small buyers and big makers. If we were Apple, we'd get overnight service. But we're not, so we wait.

Finally, a short supply chain is an incentive to innovate. If you're outsourcing the manufacturing of huge parcels of a product, you can't change that product until you've sold all the ones you've already made (at least not if you want to stay in business). So that often

means sitting on your hands, waiting for Version 1 to sell out before starting to make Version 2. But when you're doing just-in-time manufacturing, you can change the product every day if you want — whether to take advantage of some better or cheaper component or to improve the design.

In the land of the long supply chain, meanwhile, things are changing, too. Inflation-adjusted labor costs in China have more than tripled in the past decade. Wages in China's southern cities are approaching \$6 an hour, roughly what they are [in Mexico](#).

Whether factors like these are enough to turn American businesses from outsourcers to quicksourcers remains an open question. But I'm betting my money that they will. The sense of possibility I felt when I first crossed from Hong Kong to Shenzhen in 1997 is what I now feel when I cross from San Diego to Tijuana. The trade routes of the 21st century don't have to follow Marco Polo from West to East. Indeed, in the new manufacturing landscape, the routes don't have to take you far at all.

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