



Home

*Drishti*

## Robot nirvana? Not in my lifetime.

*Your vision of a lights-out factory crashes against three very practical limitations.*

March 20, 2018

On March 6, the national media descended on the Pasadena branch of Caliburger to cover the world debut of Flippy, the first robotic burger-flipping fry cook.

The **initial reports about the event** combined lighthearted human interest with apocalyptic forewarnings of human obsolescence. *Flippy today.... The fry cook tomorrow? Then the cashier? A year from now, will humans have jobs at all?*

A few days later, new headlines appeared, this time sounding almost triumphant: humans had nothing to worry about. Flippy had **already been decommissioned.**

The official explanation was that Flippy's human coworkers could neither prepare raw patties nor put fixings on cooked burgers fast enough to meet higher-than-expected demand from curious onlookers.



For manufacturers, Flippy offers an important lesson: robots aren't going to solve all our problems, either.

## Three reasons why robots remain scarce

Flippy was supposed to address a few perennial issues faced by fast food: high turnover, labor recruiting shortages, long training times, and worker safety risks.

Sound familiar? It should. Manufacturers face the same issues. (It's no coincidence that Flippy, under its white exterior, is actually a six-axis robotic arm manufactured by Fanuc.)

Boston Consulting Group estimates that up to 90 percent of manufacturing tasks are still performed by humans<sup>[1]</sup>. The exact number varies across verticals, but it's generally true that humans remain the greatest contributor of value in the factory.

Human are, unfortunately, also the factory's greatest contributor to process variability.

This is why the concept of robots is so attractive. A lights-out factory with no turnover, no injuries, and utterly predictable output? Sounds like a vision!

More like a mirage. Here's why:



- 1. The population of robots is not increasing fast enough.** Caliburger can tell you firsthand about the scarcity of robots: While they expect to open 50 stores this year, by the end of 2018, Flippy would only be deployed in four of them. The International Federation of Robotics expects the global robot population to increase from **1.8 million in 2016 to 3.0 million by 2020**. According to economists Daron Acemoglu and Pascual Restrepo, each new robot **replaces 5.6 workers**. By that math, the 1.2 million new robots will replace 6.7 million jobs. That sounds like a lot—until you learn from Goldman Sachs Research that there are currently more than 340 million global temporary and full-time manufacturing workers<sup>[2]</sup>. By that logic, the increase in the robot production will only displace less than 2 percent of the world's manufacturing workforce.
- 2. Mass customization trends are on humanity's side.** Robotic speed and precision is ideal for high volume situations. But the need for market differentiation is driving manufacturing towards exactly the opposite: mass customization and lot sizes of one. "Machines excel in highly repeatable, high volume operations," says Peter **Marcotullio**, Vice President of Commercial R&D at SRI International. "Unfortunately for machines, the trend in manufacturing is for mass customization—small production runs, more process variations, constantly changing components—which is very hard to automate because of the intrinsic upfront costs. But it's very easy for a person to adjust on the fly. People are more flexible and can learn faster than machines."
- 3. There aren't enough robot specialists to go around.** Every robot requires an ecosystem of programmers, process engineers and skilled technicians. In order to fully exploit a robot's capabilities, both the process and, often, the product need to be redesigned, with second-order effects that cascade through the supply chain. "Total automation requires intense process and product design by humans," says Northwestern engineering professor Michael Peshkin. "If you are to hit such a point as 'total automation', it requires redesigning both the product and the process to make that possible. Maybe someday in the future a robot will be able to just slip into an existing process, but that is not how automation is done today." These men and women are highly trained and fairly expensive—and, these days, increasingly scarce. China, for example, is sounding the alarm about a shortage of **3 million robotics workers by 2020**.

## Don't look to robots. Look to their enabling technology.

In the face of robot scarcity, how else can a manufacturer address quality and productivity challenges?

The answer is to isolate the digital advances in robotic technology—computer vision, machine learning, connections to factory data sources—and deploy them to augment the existing factory footprint. Especially the human workforce. It's a judo move: deploying the technology developed for robots to augment human capabilities.



*Dr. Prasad Akella led the team that built the world's first collaborative robots at GM ("cobots", projected to be \$12B market by 2025<sup>[3]</sup>). He's the CEO of **Drishti**, a new company that's deploying AI to collaborate with and enhance humans on the factory floor.*

<sup>[1]</sup> <https://www.bcg.com/publications/2015/lean-manufacturing-innovation-robotics-revolution-next-great-leap-manufacturing.aspx>

<sup>[2]</sup> "Profiles in Innovation Factory of the Future – Beyond the Assembly Line" published by Goldman Sachs Investment Research on 13 April 2016.

<sup>[3]</sup> <https://www.forbes.com/sites/jenniferhicks/2017/11/29/this-new-robotic-avatar-arm-uses-real-time-haptics/#40a0c5465ef3>  
[drishtilabs.com](https://www.drishtilabs.com)

---

- Advertisement -