

As a result, Amazon, Walmart, Instacart and Fresh Direct have seen online orders soar and are scrambling to make deliveries to coronavirus shut-ins. The demand is so overwhelming that Amazon can no longer offer one- or two-day deliveries for its Prime customers and has had to prioritize groceries, household goods, medicines and other essential items. At the same time, the e-commerce giant suffered outbreaks of the virus at some of its warehouses and was hit by a handful of strikes by employees who believed that the company wasn't doing enough to protect them. In response, Amazon in late April said it would spend \$4 billion—more than its projected second-quarter profit—to buy 100 million masks, 31,000 thermometers and to institute employee testing, among other safety measures. The hope is that enough warehouse and delivery workers will remain healthy enough to keep delivering food, medicine and other crucial goods.

While it's too late for this round of the virus, Amazon and others have been working on a technology that could help contain future epidemics. Amazon's founder and CEO Jeff Bezos has jumped headlong into the autonomous vehicle race. Bezos sees a future where packages will be delivered by self-driving vans, small bots rolling through neighborhoods and drones buzzing to their destinations. And they will be unstoppable because robots don't catch the flu. When that day comes—and Bezos is betting billions that it will—one could imagine our robotic brethren bringing everything from Beyond Meat to oat milk to millions of quarantined souls.

While helping the afflicted is a noble cause, that's not why Bezos is embracing this technology. The challenge for Amazon and all other grocers is that delivering food and other goods is costing the company a fortune. In 2018, Amazon spent \$27 billion on shipping—a 23 percent increase from the previous year. The cost of a single delivery can range on the high end from \$7 to \$10. The last mile is where the costs pile up. It can account for more than half of the total cost of shipping a package. McKinsey & Company predicts that autonomous deliveries to a customer's door will allow retailers to slash shipping costs by more than 40 percent, saving Amazon more than \$10 billion a year, and giving it yet another edge over its competitors.

So the race is on to create reliable and affordable autonomous delivery vehicles. Amazon's vast computing power and machine-learning expertise make it a potentially formidable player in the field. In 2016, the company earned a patent for a system that helps autonomous cars figure out which direction traffic is traveling to help a vehicle safely enter the proper lane. In its partnership with Toyota, Amazon is developing a self-driving concept vehicle called

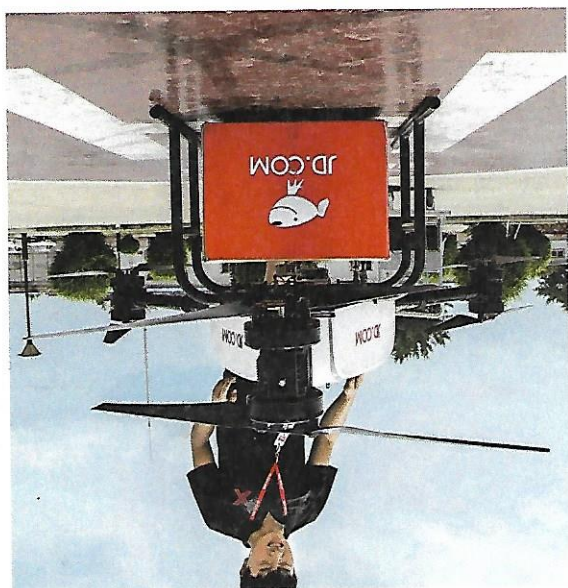
the e-Palette, a minivan that can move people or packages. It had been planned to be unveiled at the 2020 summer Olympic games in Tokyo, which have since been postponed due to the pandemic.

In early 2019, Amazon led a \$700 million investment round in Rivian, a Michigan company that is developing a battery-powered pickup truck and a sport utility vehicle. Ford later that year invested another \$500 million in the company. Around the same time, Amazon led a \$530 million investment round for Aurora, a Silicon Valley self-driving vehicle start-up that is developing the AI brains behind autonomous vehicles and plans to partner with retailers like Amazon and major automakers to create state-of-the-art autonomous vehicles.

One thing that's almost certain is that when autonomous vehicles do first appear in significant numbers, they'll be delivery vans. That's because carrying packages rather than humans greatly reduces the risk posed by self-driving vehicles. If an order of Dr. Bronner's castile soap gets crushed in a fender bender, that's unfortunate, but not a tragedy. In an accident, the vans will be programmed to sacrifice themselves to avoid harm to pedestrians, bicyclists or drivers of other vehicles. In other words, they'll crash into a tree rather than collide with a pedestrian or other car.

Also favoring delivery vans in this first-mover role is that, for the most part, they have predictable routes and therefore can more easily learn the ins and outs of complex cityscapes—reducing the chance of navigating

scramble – walczyć
(np. o byt)
coronavirus shut-in – osoba poddana samodzielnemu z powodu pandemii koronawirusa
crucial good – kluczowy towar
jump headlong into – kłuczyć towar something – zrobic coś z entuzjazmem i bez namysłu
robotic brethren – dosł. zrobotyzowani bracia, [tu:] roboty help the afflicted – dosł. pomagac ludzom w potrzebie
pile up – nagromadzać się, spierać się
account for something – stanowić część czegoś
slash shipping costs – ciąć/obniżać koszty wysłki
formidable player – potężny gracz
utility vehicle – pojazd użytkowy
state-of-the-art – supernowoczesny, najwyszszej klasy
fender bender – drobna stłuczka, kolizja



LAST-MILE FIXES

A JD.com drone demonstration in China; and Amazon's Perky Scout navigates by way of sensors



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