

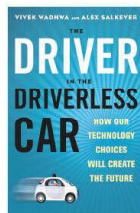
“Facebook is a Bigger Threat to Privacy than is Aadhaar”

Vivek Wadhwa, tech entrepreneur, writer and a distinguished fellow at Carnegie Mellon University's College of Engineering, has come out with a new book, *The Driver in the Driverless Car*, co-written with Alex Salkever. It looks at how technology is going to change our world in under a decade, impacting healthcare, education and transportation. Away from his passive home in San Francisco, which doesn't draw electricity from the grid, and his Tesla Model S electric vehicle, he comes to the interview in New Delhi in an Ola cab, weathering 11 am traffic and a thick blanket of dark smog. He believes technology is the silver bullet, provided we know how to use it. In an interview with **Charmy Harikrishnan**, Wadhwa says whether we are hurtling towards a *Star Trek* future or a *Mad Max* dystopia will depend on how prepared are our institutions and policymakers to deal with the massive convulsions tech will create in society, especially unemployment, which will call for large-scale retraining of workforce. Edited excerpts from an interview and a follow-up email interaction:

You call this the greatest period in history where we turn science fiction into reality.

Look at Delhi: the smog shows the city's descent into darkness. But the good news is that with technology advancing the way it is, we have reached an inflection point where it will save the day. Within five years, solar power will be 50% or even 60% cheaper than the grid. It will make economic sense for people to upgrade. And this is when the magic begins to happen. Electric cars will be a godsend for Delhi when the cost of battery storage drops to \$100 per kWh and if the cost of a car that can go up to 200 km/h falls to \$10,000. These will be eminently affordable in five years so much so that it will be more expensive maintaining the petroleum cars. If you have cheap energy, then you can think of vertical farming (where you grow crops in buildings, warehouses and containers without soil or natural light). You can have entire buildings where you can grow crops. You don't have to transport foods. You can grow and consume locally. In five or ten years, this will be economical. The big concern is employment because this will result in millions of unemployed farmers. But they have to be retrained.

It is the same worry about technology creating unemployment that had Union Minister for Transport Nitin Gadkari saying that India will not allow driverless cars even as he



“In the next 20 years or so, if we do it right, we can build Star Trek. These 20 years will be amazing and scary at the same time”

wants only electric cars in India by 2030.

The minister is misguided. Yes, there are millions of jobs at stake. But there are half a million deaths due to road accidents every year. Millions of people will die early because of pollution. Do you want to sacrifice half a million people?

Life has become unbearable for everyone. We need a vision to re-employ people. We should not stop progress. We should channel it in a more meaningful way.

You say things could change drastically in less than a decade. What about India?

Within three or four years, the economics will change. And the Indian government will have to take tough decisions. What is needed is good leadership and good governance. Go for electric cars and self-driving cars. Clean up the environment using technology. Retrain the workforce. Put them in the department of new infrastructure to rebuild our cities and clean up our rivers. It all starts with learning technology.

It is rewarding and risky. What excites you the most? And what are you terrified of?

What's exciting is that finally solutions are at hand for problems of energy, traffic, pollution, education. One of the fears is that India is going to run out of water. However, what does it take to have 100% clean water? Boil it and capture condensation and you have distilled water. The problem with that has been the cost of energy. If it drops by half, suddenly it becomes economical too. Boil the oceans – this will happen within five-six years. In India, there are 200 million children who will not get any form of acceptable education because teachers don't even show up in school. In three years, the entire Indian population will have smartphones. We will have headsets that will take us into holographic worlds. Virtual reality headsets will be as affordable as smartphones are today. Which means we can build new education systems that educate people differently. Imagine learning mathematics by building the Great Pyramids of Egypt. These are all possible within the next five, not 50, years because the cost of all core technology is going to drop.

By 2020, you say an iPhone will have the computational power of a human brain.

That will be iPhone 18 or 20. That will be the technology for high-end phones. But in another two-or three years, others will also have the same technology.

Technology also creates inequalities.

Technology creates equalities and inequalities at the same time. What worries me is that the gap between the rich and the poor is widening and our policymakers are going dumber. The message of *The Driver in the Driverless Car* is that we must make sure everyone benefits from technology. The second is we have to assess whether the rewards are greater than the risks. Here's where it gets very difficult. Gene editing, for instance. That technology will come to India before it comes to other countries because people here would want to have fair children or pink boys over girls. The risks of this technology are greater than the rewards in the short term. Then there's the question of autonomy versus dependence. It is not much of an issue in India because it is better to be dependent on driverless cars than on these horrible roads. The trade-offs will be different for every case – and with every technology we will have to be vigilant and make those choices.

How do you explain the contradiction: that while you admire Google's driverless car, you