

Redesigning transportation: can drivers end their love affair with cars?

Transportation design graduate programs in Los Angeles and London aim to envision the future of cars, and say coming change is already causing 'hand wringing' in the auto industry

On the outskirts of Los Angeles, home of epic traffic jams, live televised car chases and the Fast and the Furious original racing series, a graduate design school program is challenging car culture. Art Center College of Design in Pasadena, California, has one of the most respected car design programs in the world, with undergraduates who go on to work for top automakers. The halls are lined with automobile models that students have made over the years – many of them closely resembling cars on the roads today.

But the new Graduate Transportation Design program has taken a radical turn from previous curricula. The master's program, which graduated its first student this spring, focuses on designing for mobility at the systems level rather than drawing concepts of individual automobiles.

"The beauty of design is being able to look at the bigger picture," says Geoff Wardle, director of advanced mobility research at Art Center College of Design, who runs the program.

Wardle wants students to question the very premise of the car industry – personal vehicles, which are incredibly inefficient. Cars are heavy and gas engines waste 75% of their fuel, he said. The average American weighs 150lbs (68kg) and a Toyota Camry weighs more than 20 times more than the driver at 3,000lbs (1,361kg), which means you need to purchase another 20 gallons (75 liters) of gas just to move the driver around, Wardle explained.

Making cars more fuel efficient and designing them to be smaller at the product level isn't enough to address their larger footprint on the planet. Cars are parked about 90% of the time, and entire cities are built around this underutilization problem, Wardle said. Infrastructure for vehicles takes up a major portion of urban areas. "Aerial photos of LA show that 25% of the land area is covered by roads, driveways and parking lots," he said.

Love affair

But people love their cars. They call them fond names and anthropomorphize them. There's even a popular Disney cartoon for children, Cars, which brings them to life. Automobiles are not like other products.

"We have lots of affection for the car," said Masanao Tomozoe, CEO of Toyota's sales and marketing company, during a visit to Toyota's national sales headquarters near Los Angeles this summer. Just think of all the classic cars that Americans keep, carefully preserved, in their garages, he pointed out.

But all that affection may be getting in the way of thinking about the future of mobility. As Wardle points out: “The love of brand doesn’t translate into a love of driving.”

Paradigm shift

Halfway around the world at the Royal College of Art in London, Wardle’s alma mater, another future-focused car design program is gaining traction. Joe Simpson, research lead at Car Design Research, who supervises student research for the college’s vehicle design master’s program, tells his students to “forget about the current architecture of the car and think more systemically about how it fits into cities of the future”.

New driverless car technology – such as Google’s – is causing a paradigm shift in design, he said. Driverless cars no longer need a steering wheel. The interior and exterior might be designed differently and the space can be “multi-functional and multi-personal”, he explained.

Much of car design must meet strict crash-protection regulations and is currently “wrapped up in all these parts that protect you if you get in a wreck”, Simpson said. “If the car is driving itself, and it can’t crash, that opens up a whole new world.”

The future now

Innovations that prevent collisions, of course, are already on the market. Besides rear-view cameras, a variety of sensors and other offerings can scan the road for hazards.

Autoliv Night Vision, for example, uses sensors and infrared cameras – which detect small temperature differences – along with sophisticated algorithms to help drivers detect different types of animals and pedestrians in the surrounding environment at night. The technology, which has military origins, is already available in certain models of Audi, BMW, Mercedes-Benz and Rolls Royce, and Night Vision hopes to expand from the European luxury market to mid-level vehicles in American and Asian markets once the technology becomes less expensive.

“Driverless car technology is not really far off,” Simpson said. “To me it’s going to be a marketing and PR problem rather than a technology problem. Most car companies have this technology now and if they don’t, they will have it by 2020.”

‘Monolithic’ industry

In the end, big changes in the “monolithic” auto industry are inevitable, Wardle said. “The legacy car industry is hand wringing at the moment,” he said. “They’ve had an extraordinarily long run – most industries haven’t lasted that long.”

Not everyone, of course, is hand wringing: Wardle mentioned Tesla’s Elon Musk and Ford’s Bill Ford as two innovators who are changing the industry today. Cars will continue to evolve as technology integrates, automakers evolve and more students graduate from design programs encouraging them to think beyond individual product design.

And as connected automated vehicles become the norm, drivers will need to rethink how they relate to their beloved cars. “By 2030, the majority of vehicles will be fully automated and only a few legacy vehicles will be left,” Wardle predicts. “It’s not simple, but in principle I believe [the transportation system] can only get better in the future.”