A View on The Future of Cars

Written by Jules Procter, Summer 2022. (Revised February 2023.)

In this piece, I just want to put forward some ideas on changes to the sort of private vehicles we might be using.
The provision of public transport is a separate issue, not covered here.

We are in a transport revolution, with the move to electric vehicles starting to become acceptable, from both an environmental but also economic point of view.

So how might this pan out over the coming years?

I think the market will become segmented in the following ways :-

1) Continued development of premium vehicles (such as the Polestar 2).
This will address the expectation of those "middle managers" who have been driving BMWs, typically.
They, or the companies they work for, will pay an extra cost for the features, including increased driver assistance.
These will be the test-beds for autonomous systems.
Typical range 300 miles. Rapid recharge (CCS) to 80% in under 30 minutes. Battery pack 100kWh.

2) New medium entry level vehicles.
Cars, initially from China, will address the mass market, with a more attractive cost, to move to electrc. The vehicles will have fairly unrefined features.
So names such as BYD, Ora and Xpeng will become well known.
Typical range 200 miles. Rapid recharge (CCS) to 80% in under one hour. Battery pack 50kWh.

3) New entry level vehicles.
These will be "city cars", designed to be the runaround, to address the 2nd car market. Feature poor, limited in size, carrying capacity and range.
Typical range 80 miles. Fast charge (Type 2) to 100% in three hours. Battery pack 20kWh.

4**) Converted ICE vehicles.**
This will be the largest sector in the move to electric, by far. It is a waste of resource to just scrap existing ICE cars.
Much better to design conversion kits for the more popular vehicles already on the roads.
Examples being the Ford Fiesta, Vauxhall Corsa, and Volkswagen's Polo and Golf. Possibly kits for SUVs as well, although if you have the money to buy an SUV, you have the money to go electric without financial assistance.
After a deposit of, say, £500, the cost of the conversion to be covered by the government.
(This money is then recovered, over time, by an additional £1000 on VED per year, for that car.)
Typical range 150 miles. Fast charge (Type 2) to 100% in eight hours. Battery pack 40kWh.

We have to go electric as soon as possible. However, it doesn't make sense to just replace all the existing cars with brand new ones. Time to do things differently. In that period there will be a huge increase in the supply of conversion kits.
I think, over the next ten years, many of the well-known global car makers will go out of business. They will be replaced by component suppliers, such as Magna, who are already produced much of what is required.

Autonomous vehicles
Once autonomous vehicles are accepted (within 10 years), the era of personal ownership of cars will come to an end, for most people. A new age will dawn of hiring the appropriate vehicle for the journey, whether that is a small car for the commute to work, a larger family vehicle, or a load carrier. This will lead to safer journeys, far fewer vehicles being required, less congestion, and reduced need for car parks.
Also, lower energy consumption overall, as there will be lower build costs, and better mapping of car use to journey requirements.
There will also be a move to (semi-)autonomous powered, four-wheel, trailers and caravans. These could be electronically linked to a vehicle, and follow it where required. Or travel ahead, should the need arise.
This would mean that the smaller day-to-day cars could be used when going to the tip, or going on holiday, instead of having a big, heavy tow car.

The Missed Opportunity
The real missed opportunity in the transition from ICE to electric, has been in the very limited production of Range Extender (Rex) EVs. This is where a small petrol generator, with a corresponding small petrol tank, is used to top up the main EV battery pack. By only having an all-electric drive train, the vehicles are much simpler than hybrids, and only fire up the petrol generator when needed. For most drivers, this could mean over 80% of the time without petrol. The combination of small battery pack and small generator should have meant lower production cost, and flexible running. However, such has been the dash to all electric (BEV) cars, this technology has been side-lined, at best, or ignored completely.
Had there been large scale production and adoption of Rex cars, this would have lead to lower emissions, lower consumption of petrol, and a wider acceptance of electric drive vehicles.
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Charging
There continues to be a concerted effort to bring ever faster charging to the market. While this has it's place, the future lies with the mass rollout of type 2 chargers. After all, the electricity required to run one 350kW DC charger is the same as for 50 7kW AC chargers. We need lots of public charge points, as that is where most of us will charge. I believe a high proportion of the electricity required in the future, will come from local generation, not from the National Grid. The grid was designed based on large generating stations feeding into the network. Upgrading the network capacity is slow and expensive, and we don't have the time. Whereas the future need will be met by quick to build local micro-grids, designed for bi-directional flow, demand management, and local storage (using onboard vehicle batteries as part of the mix).

Comment
The climate emergency requires us to take radical action. Changing our travel habits is an easy win. The other changes required may will be much more difficult.

** Revision
How about his, for an idea. Thinking about the Rex system, what if a diesel generator was used which was powered by bio-fuel? The original diesel engine ran off palm oil, so how difficult would it be to design a new engine to run off vegetable oil? This would give Rex systems a future role in transport systems. It may also give some of the Japanese car companies, who have been reluctant to develop BEV models, an opportunity to continue manufacturing vehicles.