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Tuesday 21 July 2009

Who's afraid of electric vehicles?

Green opposition even to eco-friendly electric cars shows that what environmentalists really dislike is travel itself.

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The latest news on electric vehicles (EVs) looks good.

Toyota has just confirmed that it may build a hybrid variant of its Auris hatchback in Burnaston, Derbyshire - the first such plant for making petrol-electric vehicles in the EU (1). And at a Frankfurt conference of FISITA, the International Federation of Automotive Engineering Societies, which I attended last week, Tsinghua University professor Ouyang Minggao, chief scientist at China's New Energy Vehicle Programme, came from China's top science university in Beijing to give a widely acclaimed paper outlining China's ambitious plans for EVs.

In line with this, America's most famous investor, Warren Buffett, has taken a \$230million, 10 per cent stake in BYD, China's only integrated batteries-through-to-full-scale-cars manufacturer (2). Meanwhile, even that old jalopy, New Labour, has promised, in *Low Carbon Transport: A Greener Future*, a document newly issued by the Department for Transport (DfT), to publish the tentative safety, reliability and emissions criteria under which, from 2011, it hopes to allow people to gain 'help worth in the region of £2,000 to £5,000 per vehicle' for buying electric and plug-in hybrid cars (3).

Reasons for sobriety

Worldwide, however, Toyota made a lot fewer than half a million hybrids last year, compared with an overall addition to the planet's fleet of passenger and commercial vehicles of more than 70million. Moreover, EV designs stripped of the last vestiges of fossil fuels have only just begun to hit the road. So there's a long way to go before hybrids, let alone all-electric vehicles, become the majority purchase of choice; and still longer to wait before they displace hydrocarbon-powered

machines altogether.

As the International Energy Agency's Lew Fulton also confirmed at the FISITA conference, second-generation biofuels (and, no doubt, their 3G successors) will also power tomorrow's highly efficient conventional engines. This may turn out to be critical for lorries, ships and aircraft, and, in my view, will certainly delay a pure, all-electric future for light vehicles - perhaps, forever.

Yet despite all the technical obstacles in the way of EVs, distaste for the autonomy contained in quiet, clean, all-electric forms of personal transport is growing fast. The technology is barely out of the lab, yet one newspaper editorial is already worrying about the environmental costs of simply manufacturing electric cars, and concludes, in sweeping style: 'Over the past century, the car has gone from rare luxury to commonplace utility. Over this century, it will need to reverse that journey.' (4)

Perhaps, magically, the electric buses and trains which the newspaper prefers to electric cars will not themselves need to be manufactured, and so will impose no environmental costs. Perhaps, magically once more, these forms of public transport will move individuals and families from door to door, and so will really prove an alternative to private transport. But in the real world, owning one's own conventional or part-electric or all-electric car is what billions of people around the world would like to do. People are more interested in a highly mobile future than a low-carbon one.

This essay is about the technical and political prospects for EVs. It is worth reviewing these prospects in a sober manner because, both before and after COP15, the United Nations climate change conference to be held in Copenhagen between 7 and 18 December, we can expect hysteria about the impending motorisation of China and India to intensify.

It is true that CO2 emissions from global transport as a whole (including maritime and air travel) are by no means a match for emissions from the energy sector in absolute terms. But transport emissions are growing faster than emissions in all other sectors. They are coming under the spotlight more and more.

As a result, China and India, always targeted by Western environmentalists for their allegedly abject CO2 performance in the matter of coal-fired power plants, now stand in the firing line on cars, too. Just this last week, for instance, two top American policymakers - energy secretary Steven Chu, and the Brookings Institution's Strobe Talbot - have suddenly discovered that China and India must do what the West says about climate... to avoid being overwhelmed, like few other countries, by rising

sea levels (5).

China has for some time had plans to add, by 2020, a million kilometres of new roads to the 3.5million it has today (6). Now, too, India's Tata has just delivered its first production-line Nano car - which will cost just \$2,531 (7). So leave aside the fact that, in what *Fortune* magazine calls 'the great electric car race', Asian manufacturers are leaving US rivals 'in the dust' (8). The discussion on electric cars is one that reveals not just the potential for wonderful innovations in transport, but also the strength of Western hostility to mobility, and especially hostility to the mobility of people 'over there'.

The discussion also reveals that, for all their obsessive attitudes towards CO2 emissions, environmentalists would rather have no transport than plenty of the zero-carbon sort. Your personal lifestyle, not the planet, is what really bothers our green friends.

Some basics

The first thing to realise about EVs is that the Toyota Prius, which is on the market now, is primarily a petrol-driven affair. The 2010 Prius, the subject of 1,000 patents and already on sale in Japan and the Philippines, uses nickel metal hydride (NiMH) batteries to get more bang for the hydrocarbon buck - capturing energy from the process of braking ('regenerative braking'), shutting down the engine when it is idling or going very slowly ('start-stop system'), running the internal combustion engine at its optimum rate. This third-generation Prius runs, roughly, at a very creditable 70mpg, and cranks up to 60mph in fewer than 10 seconds. However, it can only run purely on its battery at speeds of about 30mph or so, and for short journeys.

Right away, then, today's hybrids are more about higher efficiency with existing fossil fuels than they are about motion derived from battery power. With plug-in hybrids, in which batteries will be recharged from electricity sockets in US garages or, in the tighter case of European housing, perhaps from redesigned lamp-posts, the balance shifts a fair bit more to independent, battery-powered motion. In the case of China's BYD, the company - which relies, it should be said, more on labour-intensive methods than on automation - already sells a plug-in which can run for 62 miles on its battery before its conventional engine, used as back-up, is required (9). This puts BYD ahead of Toyota, which plans commercial production of plug-ins only for 2012.

In fact, BYD intends to field all-electric cars later this year. Its e6 vehicle can receive, it claims, half of its battery charge in just 10 minutes, which makes it good for 125 miles (the other half takes

perhaps another hour, but adds another 124 miles). Top speed is 100mph; 0-60mph is achieved within eight seconds (10).

That China's BYD appears, technically, to have overtaken Japan's Toyota, says a great deal. Moreover GM's Chevrolet Volt, based on a 40-mile lithium-ion battery and due for launch in November 2010, will require two more technological generations for volumes to ramp up enough for prices to come down and profits to be made (11). So as with nuclear power, carbon capture, wind turbines and solar power, China looks set to lead much of the rest of the world in EVs. What's wrong with that? Quite a lot, according to the green philosophy.

Bad arguments against EVs

At the FISITA conference, Professor Ouyang Minggao outlined how China's government plans a differentiated approach to the development of EVs.

For long-distance journeys in sedans, it favours the conventional internal combustion engine, hybrids, and plug-in hybrids. For public buses, which are ubiquitous in China, it wants battery-assisted machines that use liquid petroleum gas, not petrol. Finally, drawing upon China's successes with electric bikes, it will look toward all-electric small cars for personal transportation. These machines will have in-wheel motors, will be charged with household power, and will run up to 50mph. Particularly impressive was Minggao's modular approach to each major automotive component involved in the shift to a more electric future. In China, the chance to make economies of scale in EV production is out there, and modularisation can only help that process.

These considerations, however, would not be enough to satisfy environmentalist critics in the West. As Minggao pointed out, the Chinese government hopes, by 2020, to bring coal-fired electricity generation down from 78 to 65 per cent of its total electric power. In other words, the batteries in China's EVs will draw most of their juice from CO2-belching power stations for well over a decade.

For Western governments and greens alike, that would make China's effort in EVs a non-starter. Yet this objection fails to grasp a point eloquently made at the FISITA conference by Dr Lee Schipper, of Stanford University's Prescourt Institute of Energy Efficiency: that if you aim simply to cut CO2 emissions, you don't get nearly as good results as if you aim for good transport.

EVs deserve support regardless of the emissions they bring in their wake. Though they will take a very long time to develop fully, they represent technological progress in their own right - regardless of whether they lower CO2. Given that 80 per cent of journeys in the EU and US involve fewer than

40 miles, EVs are the technology of the future for door-to-door trips. IT-assisted bus scheduling will never give the instant availability that personal transport gives. Particularly in rainy Britain, children, families, commuters and tomorrow's ageing population cannot be expected to take on multi-mile journeys by bike, even if the bikes used are electric. EVs, like conventional cars, give personal independence, time flexibility, and geographical freedom. Problems of congestion, and attendant air quality, are real enough; but only a very poor scientist would attribute these to the metal and fuel that goes into cars, rather than to poor planning by human beings. Indeed, EVs will make a useful contribution to improving day-to-day air quality in cities.

The real message: don't drive around!

In this context, the DfT's fanfare for a low-carbon Britain can only be interpreted as a general injunction *not* to travel, and as a general suspicion, too, of EVs. The DfT's *Low Carbon Transport* report argues that 'technology and cleaner fuels alone will not be the answer to the CO2 challenges in transport - when, where and how we travel will all need to evolve' (12). How delicately put! What it means is that you should travel less, and in the manner that The Authorities decide - all in the cause of Britain saving the planet, you understand.

Early on in the DfT report, the usual patriotic arrogance is followed by a truly pathetic commitment to EVs: 'We are committed to making the UK a world leader in research, development, demonstration and commercialisation of ultra-low carbon vehicle technology. For example, over the next 18 months around 340 new-tech vehicles will be demonstrated on the UK's roads through the Technology Strategy Board's ultra-low carbon vehicle competition.' (13)

No fewer than 340 new-tech vehicles! Why so puny a total? Because throughout the 117-page document, EVs get 22 mentions - and 'eco-driving' 22 mentions, too. Indeed eco-driving is being integrated into Britain's new driving test, and the esteemed Energy Saving Trust will 'promote eco-driving techniques to existing drivers'. You should pump up your tyres, have less clutter in your car, drive at an appropriate speed, and stop and start less as well (14).

Not content with telling us what to eat, and planning to meter our energy use in the home, New Labour wants to control our every move - literally:

'Government also has an important role to play. At a national level we seek to influence transport choices... Local authorities and regions have considerable influence over the way we travel, through direct delivery of transport services as well as through their decisions on strategic planning, or on the

locations of business and homes... Beyond the measures set out above that seek to promote lower carbon transport choices [sic], we should not lose sight of a more fundamental long-term solution - identifying ways of reducing the amount we need to travel.' (15)

So: you don't need to travel. As a result, you don't really need EVs. What you need instead is more use of the internet, and your local council or unelected Regional Development Agency to organise the location of workplaces, shops and homes so as to obviate car journeys (16) - including, we can only surmise, journeys by EV.

Reasons to put EVs in perspective

Among automotive suppliers, Bosch Automotive Group, Germany, is a very strong contender - not least, in all the components that go to make up EVs. Therefore when Bosch's chairman, Dr Bernd Bohr, recently stated that, 'despite the alternatives', the internal combustion engine 'will remain the dominant technology over the next 20 years' (17), we see little reason to disbelieve him. As a result, 'Supporting innovative research into new biofuels' should be the most important single heading in the DfT's *Low Carbon Transport*: as a statement of purpose, it certainly deserves a chapter. Instead, biofuels get one page of coverage, and 42 mentions - 13 of which are prefaced by the obligatory adjective 'sustainable'.

So: biofuels, a potentially carbon-neutral source of energy for conventional cars and hybrids alike, gain support that is qualified nearly a third of the time. By contrast, cycling gets more than 70 mentions, and walking 12. Only once is it admitted that cycling and walking 'will sometimes be impractical'.

This is New Labour's vision of British leadership in ultra-low carbon vehicle technology - and we can be certain that David Cameron, the helmeted cyclist with the chauffeur-driven limousine right behind, will differ little in his route.

Genetically engineered biofuels might not fit the government's apprehensive criterion 'sustainable', but there is much to hope for in this domain (18). Indeed, genetic engineering has already opened up new possibilities in... electric batteries. At the Massachusetts Institute of Technology, researchers have constructed viruses to build both the positively and negatively charged electrodes in a lithium-ion battery (19).

There remains much to play for with EVs, and a rapid acceleration in their development is by no means excluded. Nevertheless, opportunities with biofuels, along with plain old higher efficiencies in

internal combustion engines, make it important not to lurch from optimism to euphoria about electric cars.

Conclusion

Anywhere batteries are used, Western regulators will very probably insist on an overly stringent regime to ensure that each and every cell is highly durable and that, once spent, is dutifully recycled. Regulators will worry, too, that 60 per cent of the world's lithium carbonate is in Bolivia - a dangerous kind of place. In fretting about 'peak lithium', they will likely ignore the large quantities of lithium that are available in China and Africa.

Above all, however, the strictures that the DfT applies to cars of any sort in Britain (population 61million) will apply all the more to cars in China (1.3billion) and India (1.1billion). The East will find that going electric in transport will be the kind of modernity that the West just does not want to see. Yet once China and India move decisively toward nuclear power, carbon capture and storage, and a sensible, large-scale application of wind and solar power, electric vehicles will have everything to recommend them.

They certainly deserve full support now. Enough with bicycles. Enough with shoe leather. Forward with electric cars!

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(1) Toyota considers building hybrid car in UK, *Financial Times*, 14 July 2009

(2) Warren Buffett takes charge, *Fortune*, 13 April 2009

- (3) p42, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009
- (4) Cars: Electric dreams, clunky reality, *The Guardian*, 16 April 2009
- (5) US officials press China on climate, *New York Times*, 15 July 2009; and Clinton can deliver a tough message to India, *Financial Times*, 16 July 2009
- (6) China needs to add 1mIn km of highway by 2020, *China Daily*, 17 November 2007; China needs to add 1mIn km of highway by 2020, cited p330 James Woudhuysen and Joe Kaplinsky, *Energise! A future for energy innovation*, Beautiful Books, 2009
- (7) World's cheapest car: first Tata Nano is delivered in India; due in US in two years, *USA Today*, 17 July 2009
- (8) The great electric car race, *Fortune*, 14 April 2009
- (9) Warren Buffett takes charge, *Fortune*, 13 April 2009
- (10) Detroit 2009: BYD e6 - world's first production dual-mode plug-in hybrid crossover, *Autoblog*, 12 January 2009
- (11) Tom Stephens, the new chief of product development for General Motors, interviewed in GM product chief says new vehicles must be hits, *Associated Press*, 20 July 2009
- (12) p34, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009
- (13) p6, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009
- (14) pp10 & 77, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009
- (15) pp62 & 83, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009

(16) pp83-84, Department for Transport, Low carbon transport: a greener future - a carbon reduction strategy for transport, July 2009

(17) Bosch as a systems supplier: many roads lead to the future of the car, presentation at the 59th International Automotive Press Briefing, Boxberg, June 2009

(18) See pp330-332, James Woudhuysen and Joe Kaplinsky, *Energise! A future for energy innovation*, Beautiful Books, 2009

(19) See Yun Jung Lee, Hyunjung Yi and others, 'Fabricating Genetically Engineered High-Power Lithium-Ion Batteries Using Multiple Virus Genes', *Science*, Vol 324. No 5930, 22 May 2009. MIT researchers have also developed a glassy lithium phosphate coating to make the charging of lithium-ion batteries extremely rapid. See Byoungwoo Kang and Gerbrand Ceder, 'Battery materials for ultrafast charging and discharging', *Nature*, No 458, 12 March 2009

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