How will the 'build it and they will come' approach play with autonomous vehicles, electric vehicles, car clubs and
'mobility as a service'

The growth in cycling in London since the construction of the Cycle Superhighways and other safe infrastructure tends to support the 'build it and they will come' mantra. But how far can it be pushed and will it hold up under the impact of upcoming changes in urban transport?

What makes people choose to cycle?

People choose to ride bikes in London based on their assessment of a variety of pros and cons:

Pros

- the alternative is almost always public transport which is crowded, sometimes unreliable and generally slower than cycling for journeys of up to 5-6 miles
- health benefits
- minimal environmental impact
- predictable journey times
- door-to-door transport
- very low cost
- positive past experience of cycling

Cons

- the perception of danger
- lack of direct cycle routes
- the physical effort
- risk of bad weather
- the cost and inconvenience of acquiring and maintaining a reliable bike
- secure parking at both ends of journeys
- mixed-mode travel difficult to organise, e.g. a switch to public transport if weather changes
- some people have the option to use a car and will do so even for short journeys

The rapid growth in cycling that we have seen recently in London suggests that a growing minority of people are concluding that the *Pros* outweigh the *Cons,* for them. But we can't assume that improvements to infrastructure and safety will turn the minority into a majority.

The balance depends very much on individual circumstances and new transport options may well disturb the balance. This note identifies some things that may alter the balance in the coming years and suggests ways in which cycle campaigning might respond to those changes.

Future scenario

Information technology has already brought significant changes to the urban transport mix and this is likely to accelerate. They all exploit the mobile internet as a platform for the provision of transport services for profit. So far in London this has been exemplified by the advent of car rental clubs, Boris/Santander bikes and Uber. Their novelty and success derives from the storage and use of real-time data providing accurate and up-to-date information about the availability, cost and likely duration of any journey.

Several recent studies [*IPPR 2017, ITF 2016*] have suggested that these new systems are early examples of a radical and disruptive change in the way in which urban travel will be organised in the future. Their scenario is one in which vehicles of most sorts – bicycles, cars, buses, trams and trains are tracked, managed, maintained, booked and paid for via the mobile internet. Some or all of them may be organised as an integrated service in which each individual journey is planned based on the user's preferences, budget, and time constraints – dubbed 'Mobility as a Service (MaaS)'.

MaaS will begin to emerge with the wider availability of smart buses, ('one-way') car clubs, Uber and its competitors and pervasive rental bikes.The scenario does not depend on the emergence of autonomous ('self-driving') vehicles but it will be significantly accelerated by it because AVs are expected to reduce dramatically the price of an Uber-style journey [Evans 2017].

Implications for cycle campaigners

This is a complex issue. I believe we need to do as much as we can, as soon as we can to bolster the *Pros* and reduce the *Cons* for people choosing to cycle. Here are some possible campaigning goals:
- Road pricing to counteract the negative effects of excessive use of MaaS motorised vehicles (i.e. congestion, pollution, road danger).
- Get plenty of cycle infrastructure in place before MaaS companies start demanding road space.
- Support pervasive rental bikes – on the Chinese model, huge numbers of cheap and convenient bikes would help make it an easy option or a default choice.
- Ensure that bike rental companies' offerings are properly designed and managed.
- Promote electric bikes to remove the 'physical effort' objection to cycling.
- 'Data is king'. We should join with the open data/open rights campaigners

to ensure that the key data on roads, travel statistics and real-time state of the road network is available to all at low cost. This implies that the highway authority (TfL) should legislate to require providers (taxis, Uber, etc.) to make their data available in standard formats/APIs. Without that, any provider can distort the options to favour their service.

Bibliography

[IPPR 2017] This recent report from the Institute for Public Policy Research has opened a very interesting new perspective on the future of travel in London and the implications for active travel modes [Crossroads: Choosing a future for London's transport in the digital age](#)
Summary: [goo.gl/kkQhdK](#), Full text: [pdf](#):

Essentially: the future of urban transport is likely to be controlled and exploited for profit using digitally-managed and networked vehicles. By default that will be private enterprises. Local government (TfL) should at least act as a data holder and provider and at best would offer municipally-provided MaaS.
This report explores the effects that these changes are having now and could have in the future. It argues that technological developments in transport could complement existing transport policy, and that positive network effects between new and existing transport services could create an unprecedented ability to overcome London's transport difficulties, providing the mayor with profound scope to improve the city's spaces and Londoners' lives.

This report's central conclusion is that public intervention is required to realise these ends, and that a window of opportunity currently exists in which action can and must be taken by London's government. When this window closes, it will markedly increase the possibility of a negative path dependence upon which new technologies will exacerbate existing problems, and create new ones. The mayor of London should act now to provide a vision and set of objectives that lays out how new services can realise their potential to form a positive part of London's transport system, and provide the market framework through which this can be achieved.

[ITF 2016] International Transport Forum [ITF] (2016) Shared Mobility: Innovation for Liveable Cities, Corporate Partnership Board report. [http://www.itf-oecd.org/sites/default/files/docs/ shared-mobility-liveable-cities.pdf](http://www.itf-oecd.org/sites/default/files/docs/shared-mobility-liveable-cities.pdf)

This report describes an interesting study that micro-modelled mobility in a medium-size city:
This study models the impact of replacing all car and bus trips in a city with mobility provided through fleets of shared vehicles. The simulation is, again, based on real mobility and network data from a mid-size European city, namely Lisbon, Portugal. In this follow-up study, we examine a different configuration where shared mobility is delivered by a fleet of six-seat vehicles ("Shared Taxis") that offer on-demand, door-to-door shared rides in conjunction with a fleet of eight-person and 16-person mini-buses ("Taxi-Buses") that serve pop-up stops on demand and provide transfer-free rides. Rail and subway services keep operating in the current pattern.

Findings included:
Congestion disappeared, traffic emissions were reduced by one third, and 95% less space was required for public parking in our model city served by Shared Taxis and Taxi-Buses. The car fleet needed would be only 3% in size of the today's fleet. Although each car would be running almost ten times more kilometres than currently, total vehicle-kilometres would be 37% less even during peak hours. The much longer distances travelled imply shorter life cycles for the shared vehicles. This enables faster uptake of newer, cleaner technologies and contributes to more rapid reduction of CO_2 emissions from urban mobility.
Citizens gain in many different ways. They no longer need to factor in congestion. Almost all of their

trips are direct, without need for transfers. Mobility is much cheaper thanks to the highly efficient use of capacity; prices for journeys in the city could be 50% or less of today even without subsidy. Huge amounts of space previously dedicated to parking can be converted to uses that increase livability, from public parks to broader sidewalks, and more and better bicycle lanes. Particularly striking is how a shared mobility system improves access and social inclusion. In the simulation, inequalities in access to jobs, schools or health services across the city virtually disappeared.

[Evans 2017] Cars and second order consequences
Blog by Benedict Evans, March 2017
A good evaluation of the social and economic consequences of EV and AVs.

[Cyclable 2017] Cycleways and congestion – getting beyond the windscreen mentality
Blog by 'Cyclable' analysing the real causes of traffic congestion in London.
[McFarland 2017] The case for bicycles' inevitable triumph over cars - May. 5, 2017
http://money.cnn.com/2017/05/05/technology/bikes-disrupt-cars/index.html
Horace Dediu on Twitter: "Bike sharing vs Car sharing. https://t.co/PZVmupJtm9"
Summary: Cheap and cheerful stationless bike sharing as the Chinese are doing it (e.g. OFO) will be so pervasive that they will become a default mode for city travel. Their growth will bring demand for safe infra and political will to do it.
Stats: Beijing (pop 21m) has 650,000 shareable bikes! That would equate to about 250,000 for London or about 40,000 for Cambridge.

[TfL Open Data] TfL Open Data, cycling.data.tfl.gov.uk
Includes:

- Cycle hire usage data by month (CSV)
- SuperhighwaysQuietwaysExistingCompleteDatafeed20170131.kmz

George Coulouris, v 1, 17 May 2017