Researching Social Perspectives of Emerging Technology Hype

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Sunday 13th January 2019
1. Introduction
2. HYPEotheticals & Lies
3. Automation & Control
4. Transport Disadvantage
5. Transport Poverty
6. Other Stuff
This paper explores social perspectives on the emerging technology debate

- There is a never ending ‘Tsumani’ of media telling us about new technology ‘fixes’
- BUT what are the social implications for disadvantaged groups in the community?
- This paper is a ‘Think Piece’ drawing together available published research including some speculation and thinking on issues and research gaps
- The aim of review is to be unbiased and to be based on published evidence; to explore likely positive and negative impacts of new technologies in transport on disadvantaged communities.
- Main focus is URBAN
It is structured as follows:

- HYPEotheticals & Lies
- Automation and Control
- Transport Disadvantage
- Transport Poverty
- Other Stuff
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An important starting point - Most Emerging Transport Technology is not real; its hypothetical speculation – like driverless cars…

- Driverless cars don’t really exist
  - Most have shadow drivers just in case; some have two
  - All are trials
  - They are fantasy projections imagining an ‘ideal future’
    - But how realistic is this
    - How will it influence disadvantaged groups?
  - Very little to almost zero real travel actually occurs; a few hundred trips in the context of billions of trips a day
...or Mobility as a Service (MaaS) [we don’t even know what this is yet?]

**Whats MaaS?**

- Unified mobility “gateway” (website or smartphone app)
  - Multimodal trip choice journey planning
  - All modes (PT, carshare/club, taxi, TNCs, car hire, bikeshare)
- Unified trip payment model: single account
  - Pay as you go
  - Monthly subscription
- Goods and personal travel planning integrated

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*1: Ticket integration, 2: Payment integration, 3: ITI integration, 4: Mobility package integration **in research phase

Source: 2016, Maria Kamargianni, Weibo Li, Melinda Matyas, Andreas Schäfer "A Critical Review of New Mobility Services for Urban Transport" Transport procedure 14 2016 18-21
Even ‘Shared Mobility’ - a new tech that really exists - is misunderstood – people think ‘sharing with others’ is effective and efficient, and that it’s a significant growing trend...
...this is LIE; ‘Shared Mobility’ has very low (often ZERO) shared vehicle occupancy – shared occupancy in cities is in decline – so WHY is there so much MISUNDERSTANDING and OPTIMISM BIAS...

Shared Mobility Doesn’t Involve Shared Occupancy

- Evidence
  - Uber assumed to have the same occupancy as Taxi at 1.66 per vehicle (including the driver)
    Source: San Francisco County Transportation Authority (2017) ‘TNC’s Today’
  - CarShare – average vehicle occupancy is 1.44 (including the driver)
    Source: Cervero, R; Golub A and Nee B (2007) ‘San Francisco City CarShare: Longer-Term Travel-Demand and Car Ownership Impacts’ Institute of Urban and Regional Development University of California at Berkeley

Sharing of Vehicles in Cities is in Decline

This is Called ‘SHARED MOBILITY’

This is not called ‘SHARED MOBILITY’
Optimism Bias is caused by the HYPE CYCLE – its technology marketing over promising to encourage investment in often unproven technology – we’ve seen it all before (and will see it again).

The Technology HYPE Cycle – expectations are inflated creating OPTIMISM BIAS

Examples of Transport Technology ‘Fixes’ Which Flopped

Source: Gartner; https://www.gartner.com/newsroom/id/3784363
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Automation implies loss of jobs and income – unemployment is at the core of social disadvantage

USA Transportation Related Employment

Employment Impacts of Automation

“USA; between 16M and 54M jobs affected by 2030”

“Up to 375M workers globally or 14% of all workers affected by 2030”
MaaS critics have concerns about remote policy by faceless international companies – will they understand local transport needs or issues at a local scale regarding disadvantaged communities?

EU FP7 ‘PETRA’ Research – Selected Points

- Major Tension – Global players run MaaS remotely and are unaware of (or not interested in) local interests
- Outsourcing MaaS to commercial interests is the norm; risks are keeping control when you don’t have it; accountability on trade-offs and values like privacy, sustainability and efficiency
- “Optimism Bias” Tech developments have optimism; will new systems solve old problems without effort? There is no such thing as a free lunch

Source: Wijnand Veeneman, TU Delft

PETRA - Personal Transport Advisor: an integrated platform of mobility patterns for Smart Cities to enable demand-adaptive transportation systems

MaaS – Lost Links between Govt Authorities and Users

- Does user interact more with MaaS provider or Transport planning authority?

it may happen that MaaS increases inequality where premium levels of service are on offer to those who pay more
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Transport Disadvantage – People without access to Transport – Key Features

Typical ‘Transport Disadvantaged’ Groups

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Source: Currie and Senberg (2007)

Typical ‘Transport Social Exclusion’ Facets

- Physical exclusion
- Geographical exclusion
- Exclusion from facilities
- Economic exclusion
- Time-based exclusion
- Fear-based exclusion
- Space exclusion


Key Outcomes

- Access to work: Two out of five jobseekers say lack of transport is a barrier to getting a job.
- Access to learning: 16–18-year-old students spend on average £370 a year on education related transport, and nearly half of them experience difficulty with this cost.
- Access to healthcare: 31 per cent of people without a car have difficulties travelling to their local hospital, compared to 17 per cent of people with a car.
- Access to food shops: 16 per cent of people without cars find access to supermarkets difficult, compared to 6 per cent of the population as a whole.
- Access to social, cultural, and sporting activities: 18 per cent of people without a car find seeing friends and family difficult because of transport problems, compared with 8 per cent for car owners.
New Mobility & Transport Disadvantage – The Good, the Bad and…

- **The Good**
  - More transport options
  - Safer transport options (Uber smartphone app)
  - Easier to access transport options
    - Smartphones and (real time) information
    - Smartphones and easier contact between providers and users
  - Cheaper transport (sharing of vehicle costs; shared occupancy and costs)

- **The Bad**
  - Is this transport for younger inner urban educated professionals (socially exclusive)
  - Are costs higher or lower? [key research question]
  - Most emerging technologies focus on inner urban not fringe lower income areas

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Forecast Trip Generation from ‘Transport Disadvantaged’ Groups Resulting from Widespread Driverless Vehicle Availability (at low cost)

...the Ugly – destroying the viability and increasing subsidies for transport already provided and used by disadvantaged groups

**Impact of Uber on Wheelchair Taxi Provision**

Total wheelchair taxi trips declined by 44% between March 2013 to July 2014

**Figure 4** — Total wheelchair pick up by ramp taxi in San Francisco

Source: SFMTA TAB Meeting Sept 2014

**Impact of TNC’s on Public Transit**

**Figure 12.** Changes in transit use, biking, and walking after adoption of ride-hailing services

Survey question: “Since you started using on-demand mobility services such as Uber and Lyft, do you find that you use the following transportation options more or less?”

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Transport Poverty – low income households who have no choice but to pay high costs of car ownership for travel – they have mobility but as a result unviable and stressed budgets

“Transport poverty occurs when a household is forced to consume more travel costs than it can reasonably afford, especially costs relating to motor car ownership and usage”
(Gleeson and Randolph 2002)

Transport Poverty is a problem of the Urban Fringe

% Low Income Households With 2 or More Cars
Location of Suburb
Inner Middle Outer

Public Transport Supply Index

Source: Based on Currie and Tanbery (2007)
Note: PT supply index score is based on number of services per week factored by the spatial coverage of the areas by public transport. Higher values imply greater supply and coverage of services by Public Transport


“25% of low-income households can be classified as forced car ownership households”
This issue recently caused riots in Paris as Gas Taxes hikes were proposed – the Global Financial Crisis has also been linked to this issue.

Thousands in France are protesting gas taxes — and their president

People in yellow vests are deeply unhappy with Emmanuel Macron.

By Alex Ward | @AlexWardVox | alex.ward@vox.com | Nov 27, 2018, 8:30am EST

A demonstrator waves the French flag on a burning barricade on Paris’s Champs-Élysées avenue during a demonstration against the rise of fuel taxes on November 24, 2018. | Michel Euler/AP

New Mobility and Transport Poverty

**Good or Bad?**

- Cheaper transport options? (Shared capital costs of shared cars?) BUT car sharing is an inner city activity
  - Overall very unclear and too many assumptions (& hype) and no actual data
- AV’ cars? – for low income fringe dwellers?
- AV buses – first last mile transit in the urban fringe – possibly if we can get them to work

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**Are Emerging Transport Options going to be Cheaper or More Expensive?**

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1. MaaS & Perceived Transport Costs] actual total transport costs are much higher than perceived costs; but its perceived costs which drive behaviour - hence Transit is uncompetitive

Competitiveness of Car vs Public Transport – Wyndham to City

Car vs PT – Perceived Car Cost Basis


MaaS/AV’s can encourage car ownership sharing – this may reduce capital costs – but they charge marginal uses at AVERAGE not perceived costs – impacts on transit cost competitiveness could be BIG

Competitiveness of Car vs Public Transport – Wyndham to City

Car vs PT – AVERAGE Car Cost Basis


2. AV’s and Urban Traffic Sewers – Environmental Justice is about unequal transport impacts on disadvantaged communities – A fully AV future implies unlivable streets – who will be impacted?

Traffic Congestion is already known to impact streets where the socially disadvantaged live

“A FULL AV future has platoons at speed even through intersections

Is this how we want cities where we live to be? Who will be impacted most? – I bet it’s the socially disadvantaged

“Impact of traffic on deprived communities: Children from the lowest social class are five times more likely to die in road accidents than those from the highest social class. More than a quarter of child pedestrian casualties happen in the most deprived 10 per cent of areas.”
Transit Fightback: Pushback on Technology Hype for Stronger City Futures
Tuesday 15th January 3:45p.m. to 5:30p.m.
Room 145B, Washington Convention Centre

A tsunami of global media suggests autonomous vehicles and shared new mobility modes using private vehicles are solutions to the congestion, economic and environmental problems of growing cities. But much of this discussion is based on hype; the promotion of new technologies with little proof, feasibility and little basis in fact. Yet the global broadcasting of these over-hyped technologies is harming urban public transport systems globally; it is a widely held view that transit has no future as a result of new mobility. This session provides evidence that transit systems remain the core of solutions for congested cities. Evidence is shown that new mobility solutions using private vehicle travel remain problematic for growing cities.

Sponsored by AP000 the TRB Public Transportation Group

Presiding Officer: Paul Skoutelas
President and CEO, American Public Transportation Association (APTA)

Speakers:
Dr Graham Currie
Monash University
Lies, Damned Lies, AV’s Shared Mobility and Urban Transit Futures

Christian Wolmar
Author of 'Driverless cars on a road to nowhere'
Driverless cars: future or fantasy

Jarrett Walker
Jarrett Walker & Associates
Lean into the Wind: Defending Our Cities from Technology Hype

Dr Steven Polzin
University of South Florida
Positioning Transit to Compete as Technology Transforms Transportation

Lastly – Come to a special session on Tuesday @ TRB on this topic
Contact us via our website PTRG.INFO, LinkedIn or Twitter

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Director, SEPT-GRIP, PTRG

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