Ethical, Legal, and Political Implications of Autonomous Vehicles: An Overview

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The Big Shift: The Impact of AVs

- Autonomous vehicles (AVs) are predicted to account for at least a substantial share of total passenger miles on land by 2030.
- Electrification is predicted to be reinforced by this trend.
- According to RethinkX (May 2017) “By 2030 […] 95% of U.S. passenger miles traveled will be served by on-demand autonomous electric vehicles”.
- This technological change is likely to have major social impacts, both positive and negative.
The Big Shift and Employment

- Example of affected sectors:
  - Freight,
  - Public transit, taxi,
  - Mechanics,
  - Roadside restaurants, etc.
  - Retail sector (cheaper transportation, cheaper deliveries).

- These sectors employ a lot of people.
  - Mass unemployment?
  - Or will strong productivity growth lead to low unemployment?
  - Politics…
The End of Non-AVs?

- Car ownership replaced by Transport as a Service (TaaS).
- Cheaper, safer and more convenient for the consumer.
- AV:s can operate better when humans are absent.
- Insurance companies may make non-AV:s too expensive.
- Will non-AV:s be banned?
Car Culture

- Driving license in the dustbin of history.
- Will ownership of non-AV:s be seen as smoking (stigmatized)?
- Cf. with owning a horse (a dangerous luxury item)?
- Reduced privacy?
Why AVs are Potentially Much Safer

- **Car timescales**
  - Trip planning timescale: minutes to hours
  - Driving timescale: tens of seconds to seconds
  - Collision timescale: tenths of seconds
- **Human decoupling from driving is in this perspective an advantage.**
Potential Epidemiological Effects of AVs

- Fewer organs for donation.
- Reduced pollution from exhaust.
- Increased problems with obesity?
- More convenient to drink?
Geopolitical impact

- Electric AVs → Peak Oil Demand?
  - Oil demand and prices will plummet
  - Major shifts in the balance of power
  - Oil importing countries are likely winners (China, Japan, India, Germany)
  - Middle East, Us, Russia…
A Potential Lithium Cartel?

- Batteries require lithium.
  - Chile, Argentina and Bolivia control 54% of lithium resources.
- Cf. OPEC
Greater access to public spaces for certain groups with reduced mobility

- New cultural venues may cater to these groups:
  - Disabled
  - Elderly
  - Teens
The Ethics of AV:s

- Example: Should pedestrian safety be prioritized at the expense of the safety of passenger/driver?
  - Could make AVs less desirable.
  - Compare with SUVs being safer for the passengers.
Moral Responsibility

- Who has the moral responsibility for accidents involving AV:s?
  - Passengers? Programmers? Owners?
  - Laws could be adapted from harm caused by domestic animals (dogs, horses, etc.).
Systemic Risk

- AVs centralized decision making $\rightarrow$ centralized power (Tesla)
- Direct loss of control
  - Faster dynamics: faster positive feedback.
  - Steering agency too slow or dumb
- Emergent loss of control
  - All parts are fine, the whole fails
  - Emergence fast, or enabled by fast dynamics
Technology May Radically Change Society and Culture

- Understanding this impact is important for making social choices.
- The impact of technology has primarily been studied by economists.
- But there is more than economics.
- Ethics, law, sociology, political science, psychology…