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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?



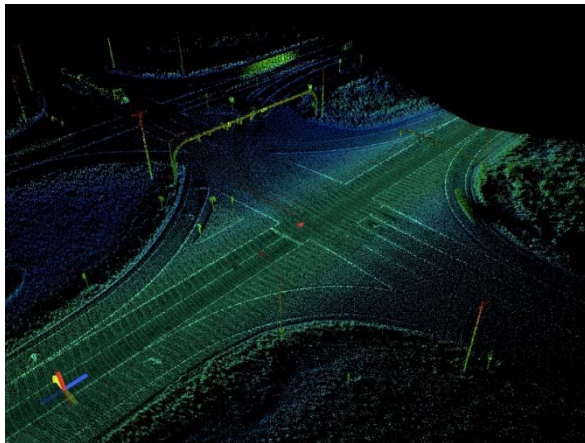
Car Culture

- 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?



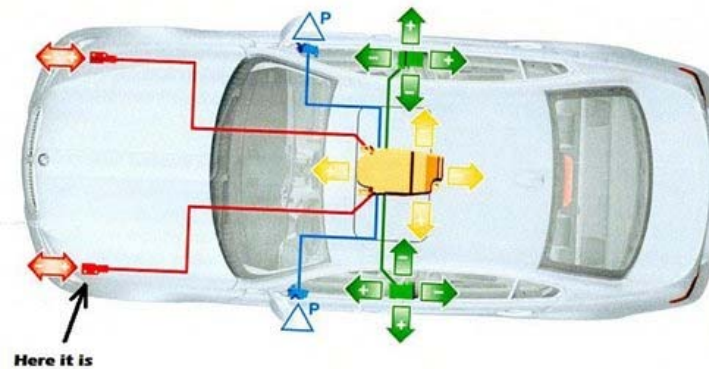
Why AVs are Potentially Much Safer

- 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



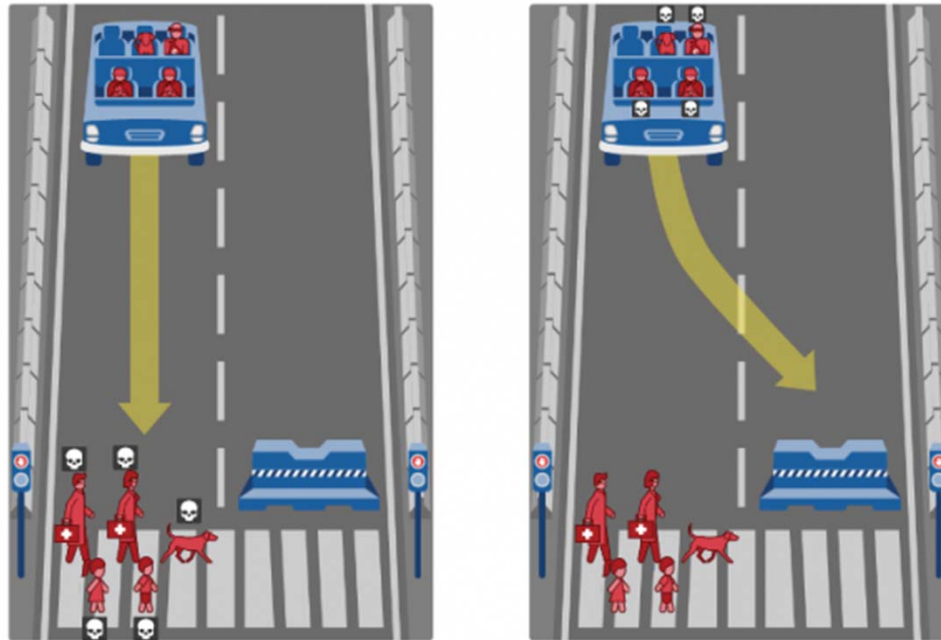
Greater access to public spaces for certain groups with reduced mobility

- 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.



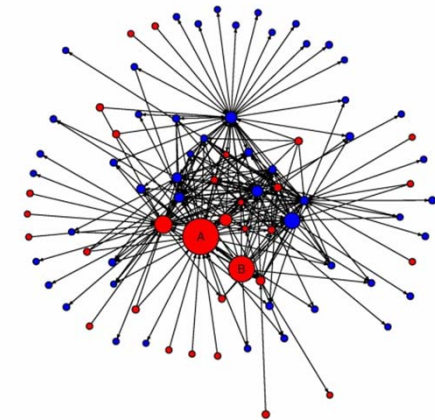
Moral Responsibility

- 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 → 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...



