

Autonomous Cars

Comparative Law and Public Policy



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1. Problem Introduction

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**Why is there a problem with the regulation
of Autonomous Cars?**

Legal Uncertainty

Hinders innovation

Increases costs

Delays adoption of the
technology

How to achieve efficient regulation of autonomous vehicles as they become increasingly common?

Traditional automobiles

Vehicle registration and permit

Safety requirements

Technical harmonization

Road traffic standardization

Autonomous vehicles

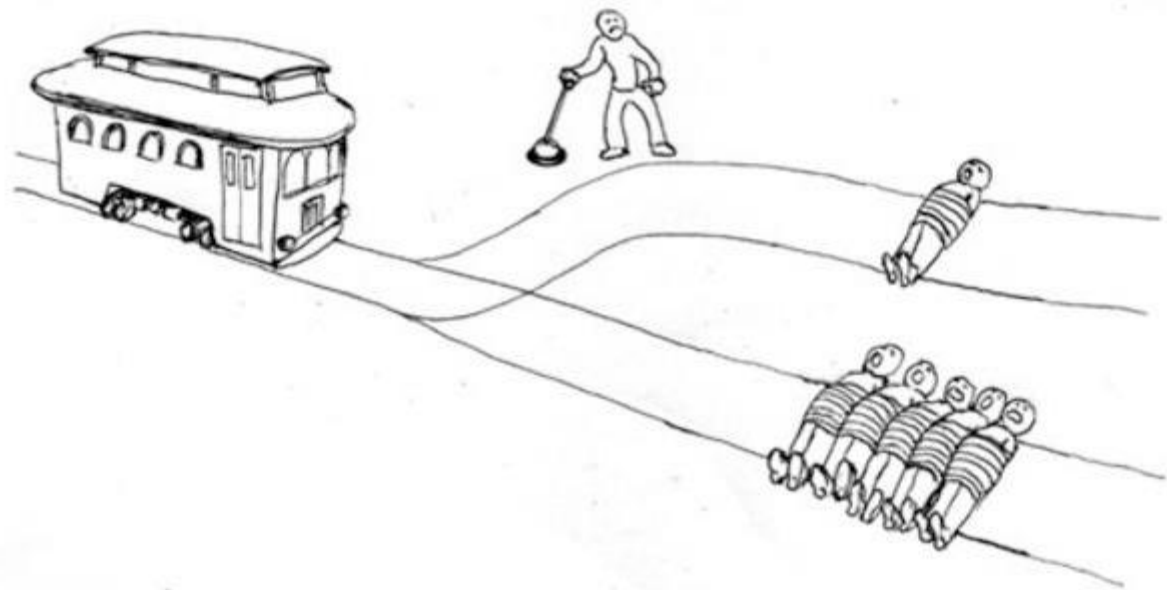
Ethical issues

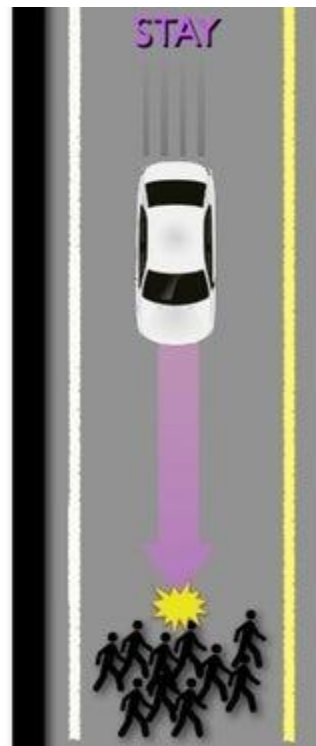
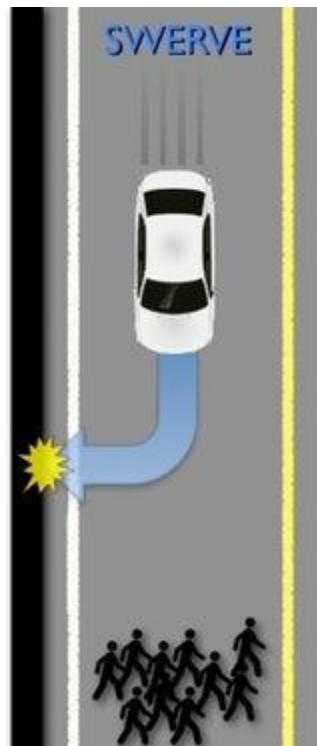
Liability

Privacy and Data Protection

Cybersecurity

Ethical Issues





- What the car should be programmed to do?
- Who should decide?
 - Passenger
 - Manufacturer/Software Designer?
 - Lawmakers

Liability



- Who should be held liable by any damages (to person or property) caused by the Artificial Intelligence driving the autonomous vehicle?
 - Owner
 - Insurer
 - Manufacturer
 - Software designer

Privacy and Data Protection

- What should be done with the geolocation data constantly produced by the autonomous vehicles?
 - How long should it be stored?
 - How should it be treated?
 - Who is allowed to access it?
 - Consent issues

Cybersecurity

- **How to deal with the new vulnerability threats posed by the inherent connectivity of autonomous vehicles?**
 - **How should security standards be enforced?**
 - **Who is held liable for breaches?**
 - **Can anything be done from a regulatory perspective?**

Concepts and Definitions

Definitions: Autonomous cars, autonomous vehicles, self-driving cars, driverless cars, autos, robotic cars, *smart* cars, highly automated vehicles (HAVs), etc...

“Autonomous vehicle” means a motor vehicle that uses artificial intelligence, sensors and global positioning system coordinates to drive itself without the active intervention of a human operator.

AB n.511, State of Nevada, Section 8, 3, (b)

SAE Levels of Automation

SAE Level 0:

Human must do everything

SAE Level 1:

An automated system on the vehicle can *sometimes* assist the human driver conduct *some parts* of the driving task;

SAE Level 2:

Car can conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving task;

SAE Level 3:

Car can drive itself, but the human driver must be ready to take back control when the automated system requests (e.g. Tesla cars)

SAE Level 4:

No need for human input, but operating restricted to certain environments and conditions

SAE Level 5:
Car can do everything

**Most issues regarding autos
concerns levels 3 to 5, as levels 0 to
2 are mostly legal**

**Permissionless Innovation
x
Security and Liability**

Permissionless Innovation



"It's easier to ask forgiveness than it is to get permission."

- Grace Hopper

“Permissionless innovation refers to the notion that experimentation with new technology and business models should generally be permitted by default.”

“Unless a compelling case can be made that a new invention will bring serious harm to society, innovation should be allowed to continued unabate and problems, if any develop, can be addressed later.”

The Internet



The Blockchain



Precautionary Principle

Cognitive Dissonance

“Technopanic”

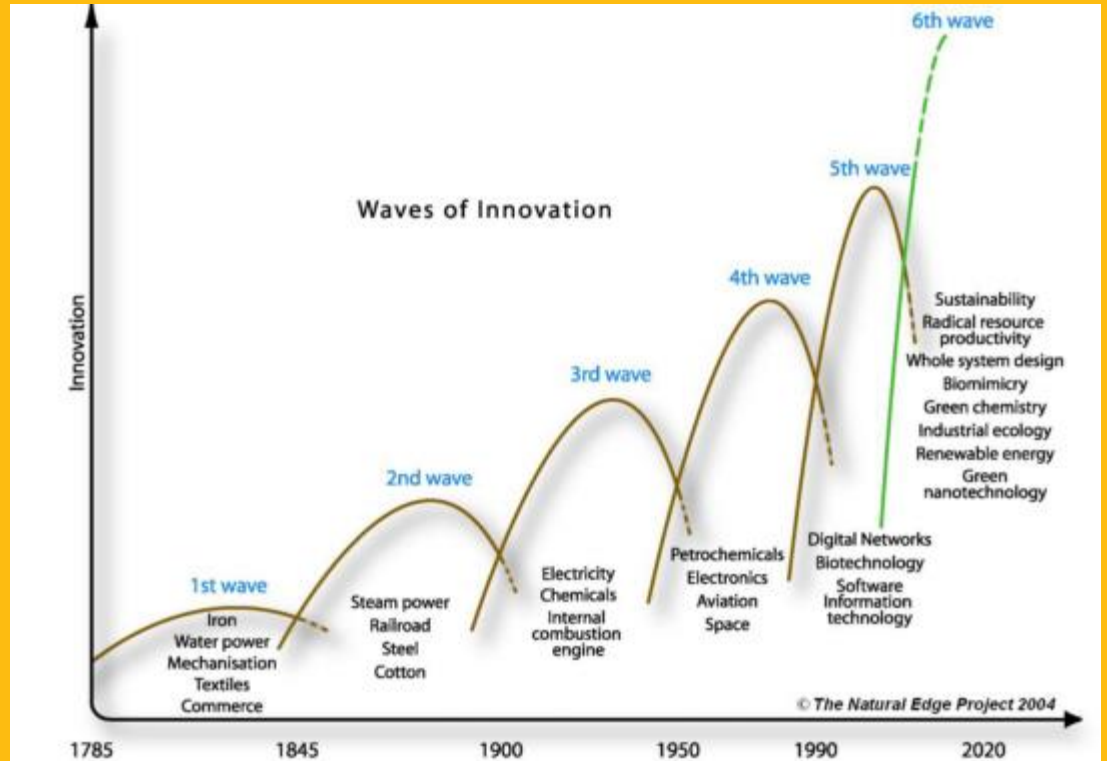
Technological Pessimism



Gales of creative destruction
(Schumpeter)

Role of Law in Innovation
(Anupam Chander)

*“If we assume the worst
about people, we will get
the worst out of them”*
(Ha Joon-Chang)



Security and Liability

Algorithm accountability:

How to audit codes to guarantee they are working according to previously established ethical principles?

How to verify if they are sufficiently safe from hacking if they are not open source?



Security Regulations

How much of traditional regulation can or should be maintained for autonomous vehicles? How much is compatible or feasible?

How should new security concerns regarding hacking and exploiting be addressed?

What is the role of best practices and standards in the regulation of autonomous vehicles?

Privacy and Data Protection,
Consumer Protection,
Registration and Certification...

**How to allow for permissionless
innovation while complying with
already established regulatory
principles?**

- **Simply keep traditional regulations and avoid novelty?**
- **Create light regulation that seeks to follow traditional principles but add no entirely new rules?**
- **Strive for lean, specific and novel regulation for autos?**
- **Develop general, principle-based regulation?**

Legislation

Two waves of regulatory action

First Wave:

- 2011-2016
- Mostly U.S. State Regulations
- Revolving around testing and clarifying the legal status of autonomous vehicles
- Many are executive orders

Second Wave:

- 2017 -
- Germany, United Kingdom and California
- Go deeper into liability, privacy and safety issues

Vienna Convention on Road Traffic (1968)

Amended in 2014 and
in force since 2016 to
clarify that
autonomous driving is
not prohibited, but
operation of
autonomous cars can
only happen if they
meet UN security
standards



Germany

- First European country to consolidate regulation on autonomous vehicles
- Places liability on the manufacturer
- Clear privacy rules (Storage time, disclosure of collection, storage on the vehicle)
- “Black Box” requirement to allow for liability checks



United Kingdom

- Places liability mainly on the insurer
- Holds the owner liable if he/she alters or fails to update the software.
- No privacy rules
- No “Black Box” requirements



Discussion

Manufacturer Liability
x
Insurer/Owner Liability

- How may each form of liability impact the development and progress of the market and of the technology?
- Can manufacturer liability encourage consumers to more widely adopt autonomous cars?
- Can owner liability reduce costs for manufacturers and accelerate investments?

“Black Box” requirements

- How to audit or keep record of who was driving - human or AI - by the time of the accident?
- Should there be a legal requirement for “Black Boxes”?



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