



INSTITUT FÜR HÖHERE STUDIEN
INSTITUTE FOR ADVANCED STUDIES
Vienna

Autonome Fahrzeuge, Ethik und die Zukunft der Mobilität

Dr. Robert Braun

Senior Researcher

Institute für Höhere Studien

Techno Science and Societal Transformation

Ethik in der Forschungspraxis: Wege zur Umsetzung

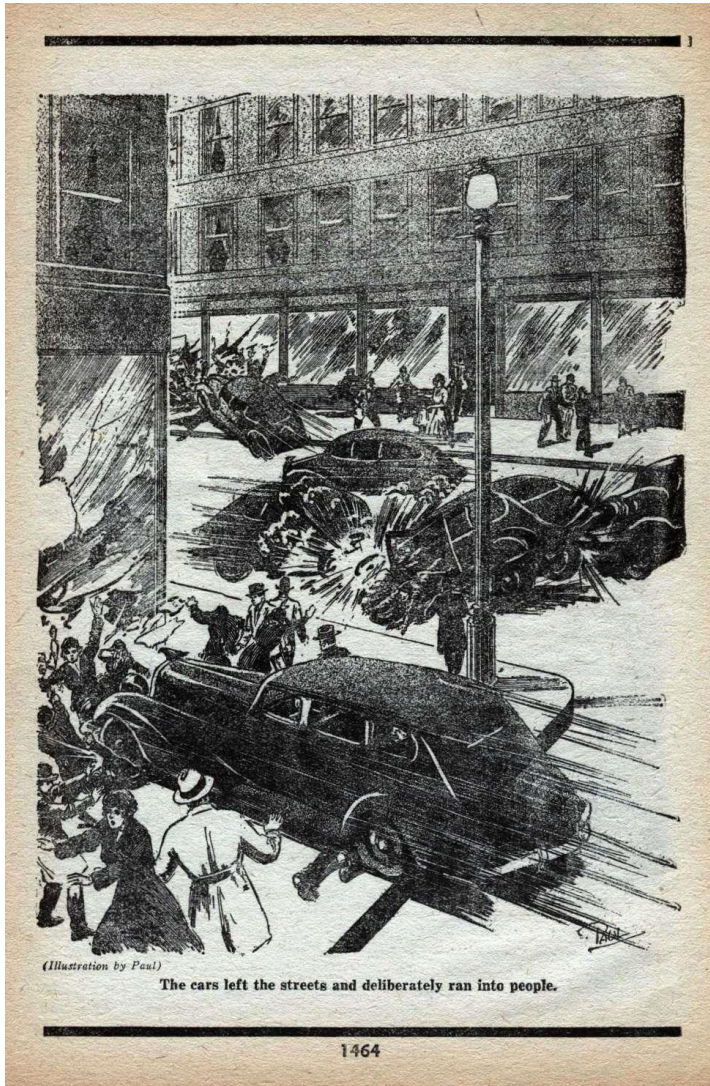




ELECTRICITY MAY BE THE DRIVER. One day your car may speed along an electric super-highway, its speed and steering automatically controlled by electronic devices embedded in the road. Travel will be more enjoyable. Highways will be made safe – by electricity! No traffic jams . . . no collisions . . . no driver fatigue.

Fascination with autonomous cars

- ▶ As early as 1930s:
David H. Keller: *The Living Machine*, 1935
- ▶ Asimov: *Sally*, 1953
- ▶ Arthur C. Clarke:
Imperial Earth, 1976



AVs as ‘kinotopias’ (moving spaces)

- ▶ SciFi imagination:
 - ▶ Seamlessness spatio-social geometries of tech change
- ▶ Imagination as SciFi
 - ▶ Social change vs. technology change

What are we talking about ?



New mobilities
(everything & everyone on the move)

↳
'Post car' world

↳
Autonomous mobility

↳
Driverless cars

What autonomous is ?



The 5 levels of driving automation

For on-road vehicles



Human driver



Automated system

		Steering and acceleration/ deceleration	Monitoring of driving environment	Fallback when automation fails	Automated system is in control
Human driver monitors the road	0 NO AUTOMATION				N/A
	1 DRIVER ASSISTANCE				SOME DRIVING MODES
	2 PARTIAL AUTOMATION				SOME DRIVING MODES
Automated driving system monitors the road	3 CONDITIONAL AUTOMATION				SOME DRIVING MODES
	4 HIGH AUTOMATION				SOME DRIVING MODES
	5 FULL AUTOMATION				

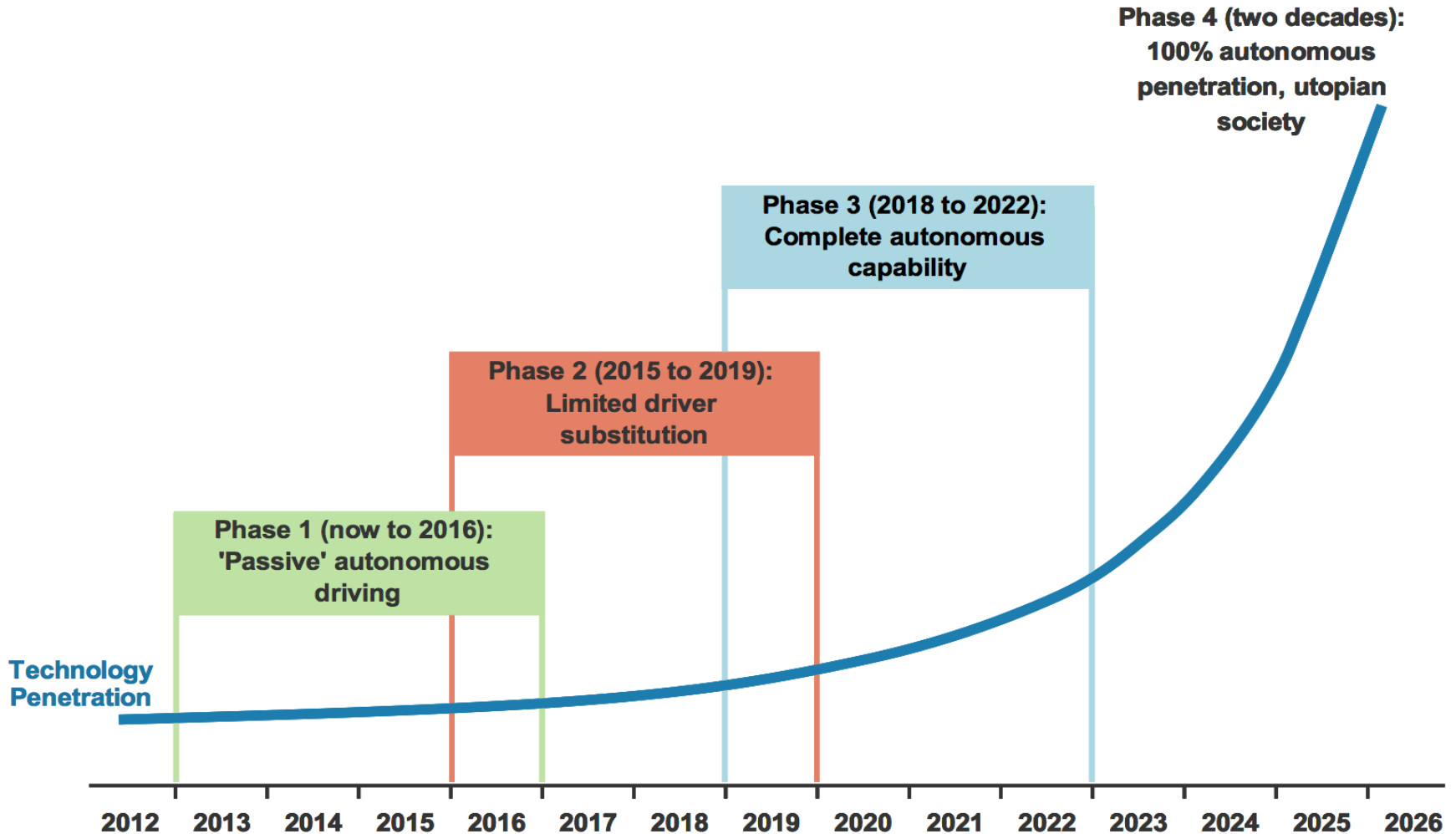
Source: SAE International

What is autonomous?

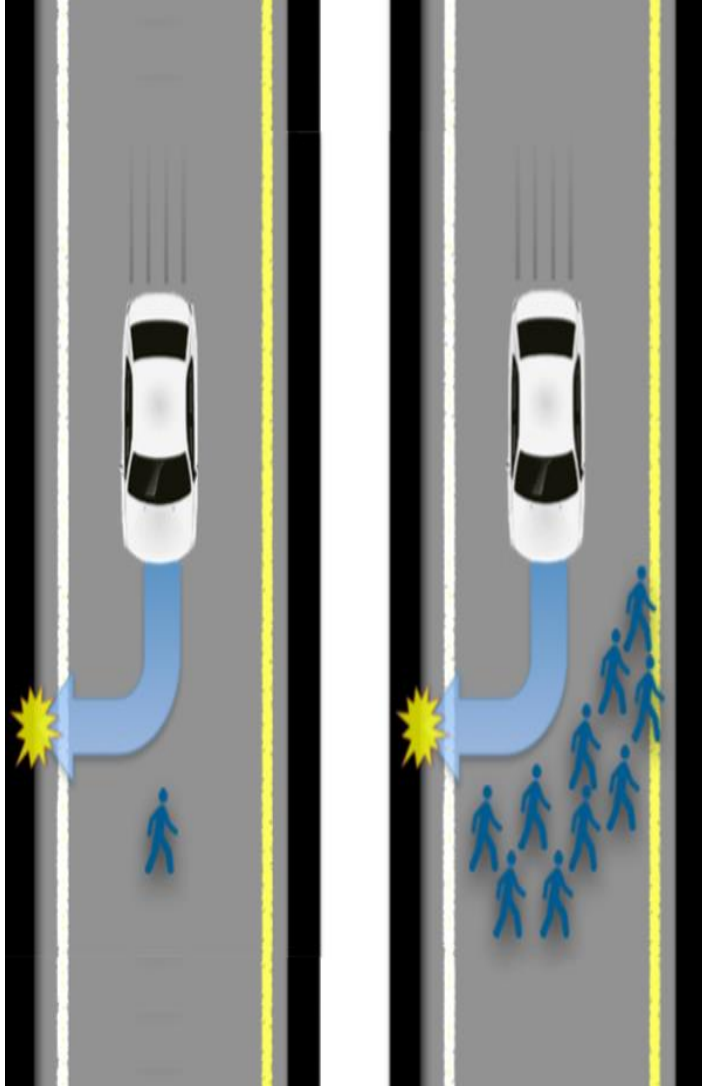


When is what autonomous?

Timeline for Adoption

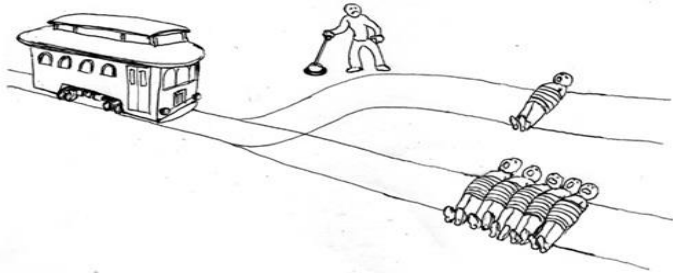


What is now?



- ▶ Tech:
 - ▶ Tech development (sensors; algorithms; modes of connectivity)
 - ▶ Real life testing
 - ▶ Business modelling
 - ▶ Behavioral modelling
- ▶ Social:
 - ▶ Challenges of acceptance
 - ▶ Ethical dilemmas
 - ▶ Privacy and cybersecurity
 - ▶ Ownership & availability
- ▶ Public policy
 - ▶ Regulation
 - ▶ Urban planning
 - ▶ Public Transportation strategy

Current challenges



► Social:

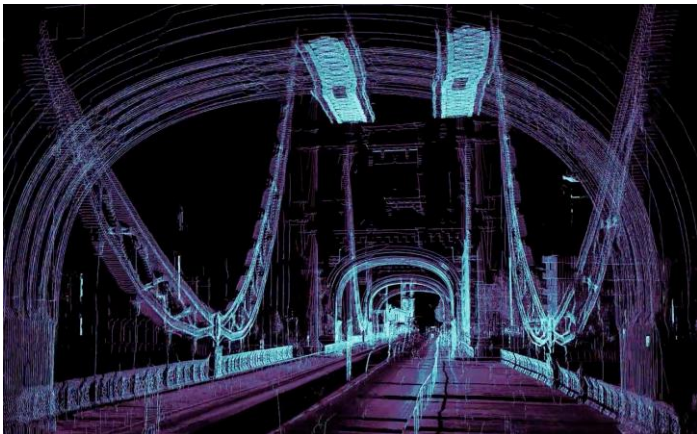
- Trolley problem (ethics)
- MaaS/PT solutions (business)

► Public policy

- Vienna Convention
- Accessibility levels

► Tech:

- High-resolution mapping vs improved vision systems
- Scaling up LIDAR scanner solutions



Future challenges

- ▶ PTs & MaaS
 - ▶ How will public and private transportation coexist?
- ▶ Urban infrastructure
 - ▶ How will AM impact our shared spaces?
 - ▶ How to plan our UI for the unknown?
- ▶ Politics of Research and Innovation
 - ▶ How will technology shape our future(s)?





R&I Challenges

- ▶ Politics of epistemology
 - ▶ Who knows what?
 - ▶ Participation & citizens engagement
 - ▶ Who controls what?
 - ▶ Technology/industry push vs. ?
- ▶ Politics of the spatial
 - ▶ Who designs what?
 - ▶ How to design for the unknown?
 - ▶ Who inhabits what?
 - ▶ How to plan for ‘the brave new world’
- ▶ Politics of technology
 - ▶ Is there still a private and public?

Food for thought

