Social Acceptance of Automated Driving
Empirical Insights and First Lessons

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Recap: Why ‘Social Acceptance’ of CAD? (1)

- Technology projects are also social programs.
- CAD linked to “societal promises”. Usually four:
  - improve traffic safety
  - increase transportation efficiency (and contribute to the reduction of climate impact of transportation)
  - different (productive) time use while travelling
  - provide individual mobility options for currently excluded groups (elderly, people with impairments, …)

- Social Acceptance as a prerequisite for the adoption / diffusion of CAD technologies and services in order to fulfill these promises and have an impact.
Recap: Why ‘Social Acceptance’ of CAD? (2)

- **Public policy perspective**: achieve related policy goals and avoid (potential, anticipated, …) societal conflicts

- **Business perspective**: achieve economic goals (new products and services, profits, avoid sunk cost, SLO/CSR, …)

- **Ethics perspective**: SA a metaphor for dealing with moral issues, value conflicts and acceptability

- **Research perspective**: Understanding all of the above (and more) and providing knowledge for orientation and action: structures and dynamics of sociotechnical change, conceptual and numerical models, empirical access, …
Innovation characteristics of CAD

- umbrella term for various automation concepts with different capabilities, ODD, performance and promises. Multidimensional
- aims at different concepts for mobility services (forms of ownership, business models, transport services)
- modifies an existing, highly regulated socio-technical system („conversion instead of construction“)
- some incarnations aim at creating new institutions, or substantially reorganizing existing institutional arrangements → radical or transformative.
- adoption / diffusion require co-operation of multiple actors / actor networks
- different TRL, no widespread deployment (yet) → innovation actors negotiate expectations and imaginaries rather than actual everyday experiences
7.1.1 I have great confidence in the reliability of fully automated driving.
Ich habe großes Vertrauen in die Zuverlässigkeit des vollautomatischen Fahrens.

7.1.2 I can drive better than a computer-controlled car.
Ich kann besser fahren als ein computergesteuertes Auto.

7.1.7 What will bother me about fully AVs is not being able to drive the way I want to.
An voll automatischen Fahrzeugen wird mich stören, nicht so fahren zu können, wie ich es gerne will.

7.1.8 In principle, I am ready to completely hand over my responsibility to a fully automated car.
Ich bin grundsätzlich bereit, meine Verantwortung vollständig an ein vollautomatisch fahrendes Auto abzugeben.
QB17.1: If you had the opportunity, would you be ready to use the following vehicle types? A) Fully automated

Overall, the views are divided
(Share of those who are skeptical did not change significantly over the last five years)

More likely to say they would be ready to use:
- Men compared to women
- Younger respondents compared to older
- Those who finished their education age 20 or older
- Students compared to retired persons
- Those without reduced mobility compared to respondents with reduced mobility

(The first four points mirror well-known general patterns of attitudes towards new technologies)

Only small (insignificant?) differences:
- Subjective urbanization
- Driving licence
Patterns mirrored in similar questions
(Data for Germany, field work Sept 2019)

QB18.1: Please tell me to what extent are you in favour of or opposed to each of the following: The deployment of fully automated vehicles on our roads

QB13: Would you ever consider purchasing an automated vehicle?

Dataset: Eurobarometer 92.1

Patterns mirrored in similar questions
Specific to Germany? Rather not.  (field work Sept 2019)

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Complementary: Dialogue Events with Citizens

Citizens’ Forum Testfeld AF, Karlsruhe 06.10.2017

Citizens’ Dialogue Autonomous Technologies, Karlsruhe 20.10.2018

Citizens’ Dialogue KIT Science Week, Karlsruhe 09.10.2021
Varieties of adoption reluctance and non-use

- Temporality? Short-term, long-term, permanent?
- Technology-related factors: safety/risk perceptions, trust, usability, privacy,…
- Ambivalent expectations on situational behavior of mobile robots (a.k.a. AVs), including ‘ethical problems’ & moral emotions
- Service-related factors: design, cost, quality, integration into everyday mobility needs and habits, constrained user flexibility
QB10: Thinking about fully automated vehicles, which of the following options would you consider will be best suited for your personal mobility needs?

Full wording of possible responses:

- **private FAV**: privately owned fully-automated vehicle
- **driverless taxi**: fully-automated vehicle that you can hire for your individual needs (e.g. driverless taxi)
- **ride-sharing**: fully-automated vehicle shared with other people and used as a ride-sharing service (i.e. with a limited number of users)
- **collective**: fully automated vehicle shared with other people and used as a collective transport service (e.g. automated public transport, mini bus service)
- **red**: none of these
- **other**: other options (spontaneous)
Crosstab: Primary MoT vs. FAV best suited

Typically most often used mode of transport

- **all**
  - car with DL: 57
  - urban public trans with DL: 7
  - private bike / scooter with DL: 12
  - walking with DL: 6
  - other with DL: 5

- **w/o DL**
  - car w/o DL: 44
  - urban public trans w/o DL: 8
  - private bike / scooter w/o DL: 26
  - walking w/o DL: 5
  - other w/o DL: 6

FAV best suited for needs

- Zu Fuß
- Fahrrad
- MIV-Fahrer
- MIV-Mitfahrer
- OV

privately owned FAV

hire for individual needs (e.g. driverless taxi)

FAV ride sharing (limited number of pax)

FAV collective (automated public transport)

None / other / DK

Dataset: Eurobarometer 92.1
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- Ambivalent expectations on situational behavior of mobile robots (a.k.a. AVs), including ‘ethical problems’ & moral emotions
- Service-related factors: design, cost, quality, integration into everyday mobility needs and habits, constrained user flexibility
- Lack of individual and collective experience with both new artefacts and new services based on them
- Diverse mobility futures – AV imaginaries as representatives of alternative visions of “good life” in societies of tomorrow
First lessons for innovation strategies and research

- The introduction of CAD is a social program. SA needs to be better captured conceptually. More than user acceptance
- CAD will change socio-technical arrangements, either deliberately, as a consequence of its diffusion/adoption, or both. This will affect multiple actors.
- Actors are embedded on order structures in the social world. AD-induced changes in these structures should be anticipated, systematically mapped and analyzed.
- CAD technologies and services should be tested in real-world labs: inclusive, long-term, transparent, mission-oriented.
- Communities and society need time to familiarize, learn and build trust.
- CAD diffusion is embedded in broader policy contexts: climate change, livable cities, ageing populations, mobility-inducing structures. CAD needs to offer persuasive solutions.