Speed talk Sessions

[F05] Emerging roles in the transition towards automated vehicles

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Introduction / Research question

There are important challenges in (urban) mobility. Recently, automated vehicles (AVs) are seen as a 'game-changing technology'. AV experts promise significant impacts on driver safety, congestion and fuel efficiency, etcetera. Hence, automated vehicles may significantly contribute to a transition towards sustainable mobility.

However, such techno-optimism ignores the fact that technological solutions alone do not lead to sustainable mobility. Turning a complex technology like AVs into a commercial product is unlikely to be simple. It can take decades for the technology to come down in cost and it might take even longer to work safely enough that we trust AVs to drive us around.

Expectations are a key element in understanding technological change. By giving definition to roles they offer some ideas of what to expect and how to prepare for opportunities and risks. Understanding the interplay between different actors' expectations is crucial for providing insights in the potential transition dynamics in the AV industry. This research looked at actor's expectations around AVs. By mapping, assessing and reflecting on expectations of actors in the AV industry in the Netherlands, this research provides a critical analysis of potential future technological situations. This is important given the rather self-congratulatory tendency that currently dominates the debate on automated vehicles.

The research question that guided our research is: *What expectations shape the automated vehicles' innovation processes in the Netherlands and what roles are inscribed for government and business actors?*

Theory

Actors in innovation processes continuously and explicitly refer to what is possible in the future. Therefore, in the absence of an already materialized reality, these references are *expectations* about the future and can serve as narrative infrastructures which enable and constrain activity and innovation. The *performative* nature of expectations enables these to steer, stimulate and coordinate action, and thereby shape developments or transitions in science and technology. Expectations contain a *script*, that is a description of the future situation and contains a distribution of roles for selves, others and technologies. Expectations depend on individual experiences, priorities and positions, but can also be seen as relational objects and as a result of social interaction.

Of particular importance are the implicit or explicit roles embedded in expectations. Within early stages of technological development, it is likely that attributed roles will be ambiguous, lacking form or agreement, and there is a high level of market uncertainty and competition between innovations. It is argued that in this phase shared expectations and visions are of high importance since enrolling a wider range of stakeholders increases the possibility of success.

Method

Twenty semi-structured interviews were held with actors from different realms of the AV industry. The interviews were recorded, transcribed and coded with the use of NVivo. This resulted in 70 different expectations that could be divided in eight dimensions (e.g. expectations on the technology, user acceptance, infrastructure, etcetera).

In a next step, three socio-technical scenarios could be developed based on the expectations expressed in the interviews. A key objective at this stage was to ensure that the set of scenarios included the broad possibility space that was found in the interviews and that no relevant future was excluded. It is important to notice that the final number of scenarios was not preset, meaning that they were sometimes merged or separated until the results showed consistent and congruent stories in which interrelations between the dimensions at all levels were present.

Preliminary findings

The three scenarios that could be constructed from the results differ on two axes: the level of automation (high or full) and whether the mobility system will be more individualistic or more collective. Strikingly, actors from knowledge institutes seem to support the scenario where vehicles do not become fully automated. On the other hand, actors from regional and national government bodies and traffic management actors had expectations that fit in a scenario with high automation and a very collective mobility system.

Another interesting finding was that most interviewees had difficulties to think of a development or transition path from the current mobility system to a future in which the AV plays a major role. This also illustrated the lack of clear roles that many actors ascribed to themselves or to other organisations.

The scenarios, however, do highlight different roles for the organisations involved, depending on which future one would prefer or anticipate. This also implies that certain futures may not unfold depending on the roles that government and businesses can and want to take. The roles indicated for government, business and wider society in the constructed scenarios can therefore serve as a handhold for discussing roles in future debates.