

Workshop:
Can autonomous vehicles change traditional gender stereotypes?

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ABSTRACT

Autonomous driving is one of the key technologies of the future: It contributes to efficient use of resources, cuts emissions, avoids traffic jams and accidents and will probably change mobility. Current estimates calculate the market value of hard- and software innovations at approximately 60 billion US-dollars until the year 2030 [11]. However, this trend towards vehicle automation is not new. A glance back at history of vehicle automation shows that major efforts began already in the middle of the 20th century: As a matter of fact, at that time it concerns the development of the first speed control which Chrysler [5] installed in 1958 for the first time.

Today, the focus is on technologies to improve security and comfort. Autonomous vehicles work without human intervention [9]. Several levels of vehicle automation can be set apart. In the year 2012, the project network 'Bast' [2] presented a first nomenclature that distinguishes between partially, highly and fully automated technologies. The kind of automation affects the relationship between human and technology.

From social-constructive perspective this contribution discusses the question, if and to what extent autonomous vehicles help to generate, strengthen or replace gender stereotypes. This knowledge interest means on the theoretical level that gender as well as technology is seen as a product of social construction ('doing gender and technology'). Both categories stand in a mutual relationship [13].

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Firstly, it is assumed that technology is affected by society and consequently by the hierarchical gender relationship. For this reason technical artefacts are gendered and typically male connoted (i. e. 'Social -Construction of Technology' (SCOT) [4]) and 'Creating social Technology' (SST) [14]). Secondly, it is assumed that this fact causes systematic prejudicial treatment of specific user groups (e. g. women, seniors). Furthermore, it is also expected that gendered technology again has an impact on the (re)stabilization of power structures. In this context, it will be assumed that particularly technology-based stereotypes regarding vehicles provide a significant contribution to gender specific attitudes concerning technology and its use.

Based on these theoretical assumptions it can be assumed that innovations in the area of automotive engineering are per se gendered. Still men dominate the technical innovation process: In the year 2013, the portion of women was only 25 percent in technical research and development sector [6], [7]. This fact leads to a highly male influenced and oriented product design. For this purpose new products often cover only stereotyped needs and requirements of women and other groups. We suspect that these gender differences also affect the motivation and attitudes of discriminated population groups using the technology. Women or disadvantaged groups must have major worries about the technology.

The review of the assumptions is made on the basis of recent scientific literature. Thus the state of the art is systematically recorded and analysed and the discourses on automotive engineering as well as different users' behaviour are presented by the authors. In terms of autonomous vehicles the available results allow us to determine the relationship between automotive and gender and to show how to structure a gender-sensitive development process.

Several representative researches prove gender differences in the acceptance of autonomous driving [1], [3], [12]. The Aral study 2015 showed that 41 percent of men, but only 28 percent of women can image to drive an autonomous vehicle. Only 15 percent of men are undecided about this question whereas 23 percent of women are. These eye-catching differences do not occur as expected between the groups of young and old drivers. In addition the TNS-study proves that women have more often reservations about the technology and that they worry loosing of autonomy.

The gendered mobility behaviour can be renegotiated against the background of the autonomous vehicle. This reduces or eliminates existing gender stereotypes in the best case. Then, typical social images about particularly 'anxious' or 'careful' female drivers may lose relevance. In the same way social images about particularly 'rare' or 'furious' male drivers may lose relevance too. Humans must not show these incorporated behaviours any longer, because the technology may be perceived as agent. Even driving errors and accidents could be attributed to technology.

The engineering practice considers gender and diversity dimensions rather unsystematically during innovation processes. Still the female inclusion is inferior to that of male scientists in the research and development area. Nevertheless there is a lack of innovative interdisciplinary cooperations between social- and engineering sciences which develop user target solution for heterogeneous consumer groups (e. g. the research project ALIAS) [10].

Autonomous driving opens attractive possibilities and does not necessarily have a male connotation. In this context, the integration of various user groups in the innovation process seems essential to us from the beginning. This offers the opportunity to thrill them for the technology and to take into account their special needs. The discussion illustrates the need for an open end and participatory

innovation cycle without predetermined conclusions. This is the best way to satisfy diversity of different communities. Especially, participatory methods in the tradition of Kurt Lewin [8] suit in this case best.

The aim of the workshop will be to sensitise the participants about the importance of gender and diversity dimensions in the innovation process. After a short introduction and exercise into the topic, we will give the participants the opportunity to discuss their different views. Thereby, the workshop will be centred on the following questions:

- What kind of gender and diversity concepts do we find?
- How do they cause communication problems?
- Which are strategies to improve the communication in innovation processes?

Methodically, we will work with a mix of short presentation and interactive procedures (i. e. exercises, world café; plenary discussion).

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