

RE-IMAGINING

THE MOBILITY

OF THE FUTURE

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**Research Report:**

**ARS ELECTRONICA FUTURELAB x SUPERSENSE x BMW**

**Experience Lab Project at Ars Electronica Festival 2022**

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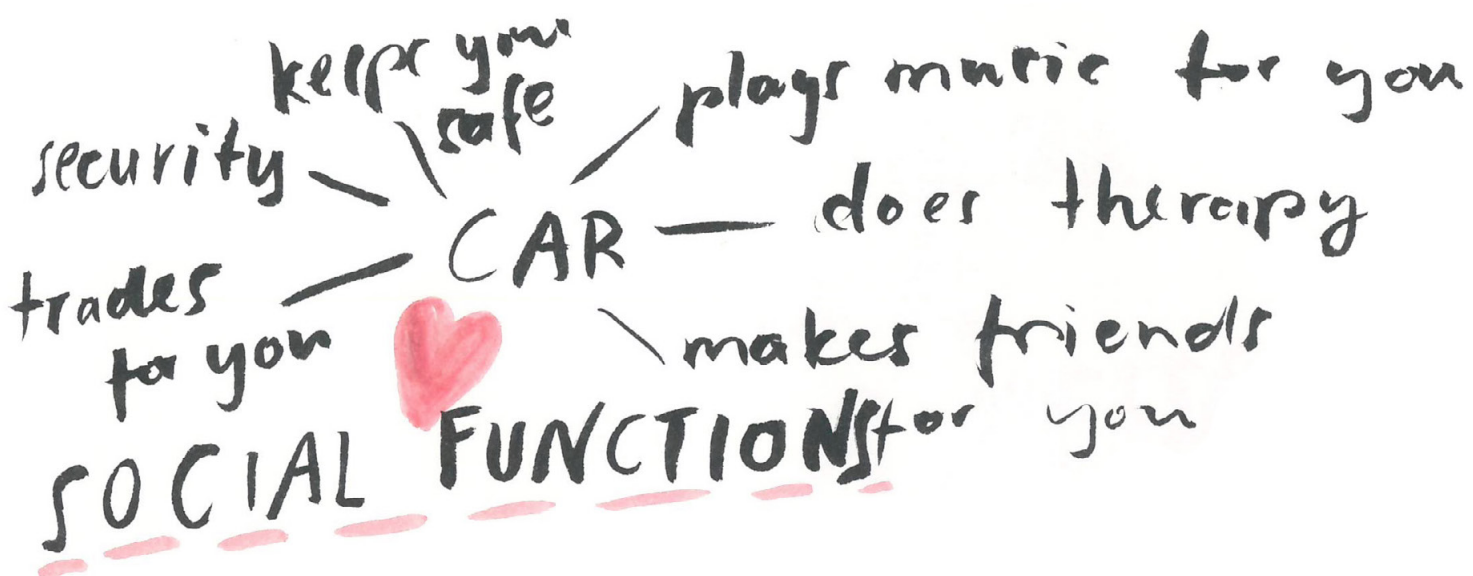
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## INTRODUCTION

This report summarizes the results of several workshops on the mobility of the future that were commonly developed by SUPERSENSE, BMW, Ars Electronica Futurelab and sociologist Bernhard Böhm. In these workshops students and visitors to the Ars Electronica Festival 2022 exchanged ideas and developed visions of the ways we will get around in the future. As this report shows, these visions ranged from utopian vehicles to new forms of public transport.

But the workshop participants didn't just imagine new types of vehicles. While discussing the future of mobility, they also reimagined the means of transportation we already know today.

In particular, they rethought the role of the car and two ideas that are fundamental to current car development: the notion that cars offer individual freedom to get from A to B, and the understanding that the most important experience in a car is that of driving. Rather than describing the future of mobility based on these established ideas of the car, workshop participants imagined the cars of the future as means of transportation that offer various freedoms, ranging from the freedom to share mobility with others to the freedom of expanding urban space. They also identified a whole range of experiences that cars should be able to provide in the future, such as the experience of retreat, connectedness, and psychological well-being. Furthermore, visitors and students to the Ars Electronica Festival questioned popular images of the future disseminated by car manufacturers. In particular, the increasing digitalization of user interfaces and the vision of the self-driving car were critically discussed in each workshop.



That mobility was rethought in this way is remarkable. Not only in the U.S., but also in Europe, Australia and, with increasing globalization, the rest of the world, the car became one of the main means of transport from the 1960s onward. Throughout this history the relation between cars and freedom has always been close. How strong this link between cars and freedom is shows the research of social scientist Sarah Redshaw, who describes cars in her book on the social and cultural aspects of these vehicles as follows: "Cars are the ultimate symbol of freedom, independence and individualism. They [cars] offer the freedom to 'go anywhere', whenever it suits and with whom one chooses in the privacy and comfort of a vehicle that can exploit the public roads."<sup>1</sup> The rise of the car as a symbol of freedom and individuality has been accompanied by an interest in the experiences of car users.<sup>2</sup> For decades car enthusiasts, technologists and designers alike have been researching, discussing and further developing cars from the driver's perspective. They have been concerned with questions ranging from how cars can be controlled, what kind of emotions a car ride triggers and what drivers enjoy while steering a car to how the relation between the drivers and their car can be improved.

Even though the success story of the automobile began more than 100 years ago<sup>3</sup>, not much has changed in the automotive industry in terms of freedom and driver orientation. Not even the electric car, one of the most recent and influential inventions in this industry, has changed the focus on the individual freedom to go anywhere and the experience of driving. On the contrary, it has even strengthened the position of the classic car as the technology that, according to historian Rudi Volti: "more than any other artefact of modern technology, (...) has shaped our physical environment, social relations and culture."

Considering the important role that the car has played in mobility in the 20th and early 21st century, analyzing the various ways visitors and students of the Ars Electronica Festival have reimagined notions of freedom, the importance of driving experience, and the visions of the future of mobility disseminated by industry opens new perspectives not only on the development of the car but also on mobility in general. This is true for reflections on the future of the car as well as for discussions about more utopic means of transportation. From a societal perspective, this text describes how the workshops rethought prevailing notions of mobility that structure and reinforce the way we get around.<sup>4</sup> In addition, through sociological reflection, the report contextualizes the participants' discussions within our current society. It takes an analytical look at the social structures that shape the way we interact and use transportation technology and reflects on the role that the dimensions of gender, age, and cultural context play in thinking about mobility in the future. In this way, multiple perspectives on the future and different ways to think about mobility related developments to come are presented.

1. Redshaw, S. (2017). *In the company of cars: Driving as a social and cultural practice*. CRC Press. p. 26f.

2. For sociological and philosophical reflections on the driver and the car, see: Dant, T., & Martin, P. (2001): *By Car: Carrying Modern Society*. In: A. Warde, & J. Grunow (Ed.). *Ordinary Consumption* (pp. 151-166). London: Routledge. The special issue "Automobiles" of the journal *Theory, Culture & Society* offers also some interesting reflections, for example: Dant, T. (2004). The driver-car. *Theory, culture & society*, 21(4-5), 61-79.; Sheller, M. (2004). Automotive emotions: Feeling the car. *Theory, culture & society*, 21(4-5), 221-242.; Thrift, N. (2004). Driving in the City. *Theory, Culture & Society*, 21(4-5), 41-59.

3. Volti, R. (2006). *Cars and Culture: The Life Story of a Technology*. Baltimore: The Johns Hopkins University Press.

4. For the relation of imagination and change, see: Jasanoff, S., & Kim, S. H. (Eds.). (2015). *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*. Chicago: University Press.

The report is divided into six chapters. The second chapter provides information about the people who participated in the group discussions and the environment in which the discussions took place. This is important because it allows the readers to better understand the scope and quality of the insights gained. In the third chapter, we summarize how workshop participants envision the new role of the car in the future and in the fourth chapter we focus on digital technology, both in terms of the advantages and disadvantages that digital technology may bring to the mobility of the future. In the fifth chapter, this report goes beyond the car to summarize the more utopian visions of the future of mobility. In the sixth chapter, we relate the various findings to each other in a conclusion, in which we also reflect on new design perspectives opened up in this report.

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## BACKGROUND, SETTING AND METHOD

The project on which this report is based was initiated by BMW Group Design. Interested in the coexistence of analogue and digital technologies, BMW wanted to know more about the question of how much of both should be integrated into the interior of a car. Against the background of an increasing digitalization of car interiors, BMW Group Design began to critically examine this development and wondered what potential analogue approaches still have for car design.

With this question in mind, BMW commissioned Florian ‘Doc’ Kaps, founder of the analogue concept store and manufactory SUPERSENSE, to redesign a BMW i3 Urban Suite car. Taking his inspiration from BMW’s slogan “Sheer Driving Pleasure,” Doc modified and added design elements of the BMW i3 to make the interior more enjoyable for potential users. As an advocate for analogue technologies, Doc designed a version of the BMW i3 that included a large rotating wooden box with analogue elements such as a trash bin, a tape recorder, a shelf for espresso mugs and plates, a mini turntable and a movie projector. Doc also reinterpreted the exterior of the vehicle as a large public message board, where people could use chalk markers to share their thoughts and ideas.

Aiming to open a public discussion on car design and the role of cars with this project, BMW and Doc approached Ars Electronica. Positioned on the intersection of art, technology, and society and made up of participants from science, business, the creative and art scenes from the region of Linz and around the world, the Ars Electronica Festival was identified by BMW to be the perfect setting for exhibiting and discussing their car. Together with members of the Ars Electronica Futurelab and sociologist Bernhard Böhm, a workshop format was then developed that encouraged visitors to think about Doc’s and BMW’s design object as well as the wider theme of ‘mobility of the future’. This focus on the future of mobility was added to facilitate an open discussion and to create a discursive space in which Ars Electronica Festival visitors could think freely about what mobility means and what forms it might take in the next 100 years.



The festival, in the context of which altogether 4 workshops took place, had the theme “Welcome to Planet B” and invited its visitors to a thought experiment: What if we had already mastered the great challenges of the 21st century? How would we then live (together) and what would characterize that society? And last but not least: What would our path there have looked like? What political, social, cultural and technological transformation would we have moved forward with, and how? The workshops were part of the Ars Electronica Futurelab Day, in which members of the Futurelab offered a program for all people who want to explore and actively shape the future. Titled “Creative Resilience for a Planet B.”, Futurelab Day explored how art, technology and creativity can help us overcome crises and design a positive future. A presentation by Adrian van Hooydonk, Senior Vice President BMW Group Design, was also part of the day.

A total of 53 people took part in the four workshops. Two workshops were held with visitors of the Ars Electronica Festival and two workshops were conducted with students from the Ars Electronica Festival University 2022. This Festival University is a joint initiative of Ars Electronica and Johannes Kepler University Linz. It invites students from all over the world to Linz to attend lectures, workshops, and excursions regarding future-related topics before and during the Ars Electronica Festival. Overall, the group of participants included a wide range of cultural, educational, and professional backgrounds across different age groups. The participants came from 23 different countries<sup>5</sup>, including artists, designers, electrical- and industrial engineers and film directors as well as journalists and PhD- and MA students. This resulted in rich and diverse perspectives on the future of mobility.

In order to learn more about the participants’ lived realities and their ideas about future mobility, the focus group method was adapted to the framework of the festival.<sup>6</sup> The workshops began with an introduction to the project by Bernhard Böhm, followed

5. In alphabetical order: Austria, Belarus, Belgium, Cuba, England, France, Germany, India, Israel, Italy, Japan, Latvia, Lithuania, the Netherlands, Nigeria, Pakistan, the Philippines, Portugal, Singapore, Spain, Turkey, Ukraine, the United States of America

6. Krueger, R. A. (1994). *Focus Groups*. London: Sage Publications

by an explanation by Doc of his design interventions at the car on display. Then all participants and moderators gathered around a table where open discussions began. During the workshops, participants were asked to give their opinion on a.) the future of the car; b.) the future of individual mobility; c.) personal ideas about how they would like to get around in the future; d.) the role that digital/analogue technology will play when thinking about the future of mobility; e.) what kind of questions they would like to explore regarding the future of mobility. All participants were informed about the goal of the discussion and the parties involved. They were also asked for their consent to become part of this research report and for audio recordings and photographs to be taken. At the end of each workshop, Doc invited the participants to leave their messages and ideas about future mobility on the surface of the car using chalk markers.

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## THE NEW ROLE OF CARS

Although the workshops opened different perspectives that go beyond the car, participants understood the car as a mode of transportation that will continue to be important in the future. Yet, not in the way the car is used today. Rather than seeing the car as the ultimate symbol of freedom, in which the experience of driving matters, participants described the car of the future as taking on different roles and meanings.

Before describing these roles and meanings, it should be briefly mentioned why the issue of sustainability, which is usually prominently discussed when thinking about technology related futures, is rather absent in the following descriptions. This is because in all the group discussions there was agreement on the importance of sustainability. According to the workshop participants, environmental sustainability is a prerequisite for the car of the future. This agreement on sustainability was so strong that no debates emerged on this topic. Hence, sustainability is not explicitly present in the descriptions.



The first way workshop participants rethought the role of cars was to question its actual importance in the future. Instead of seeing cars as the main means of transportation, participants reflected on them as ‘gap fillers’. In this conception, cars are only a small part of a mobility network that consists of vehicles such as bicycles and scooters, as well as public means of transportation such as trams and buses. Of course, cars are already today not the only vehicles used and people switch between public and individual transportation. However, this vision is different from the status quo, as most workshop participants agreed that public means of mobility need to be expanded in the future to create a more sustainable and inclusive transportation system. Therefore, in the vision of the future of the gap filler car, autos are used only

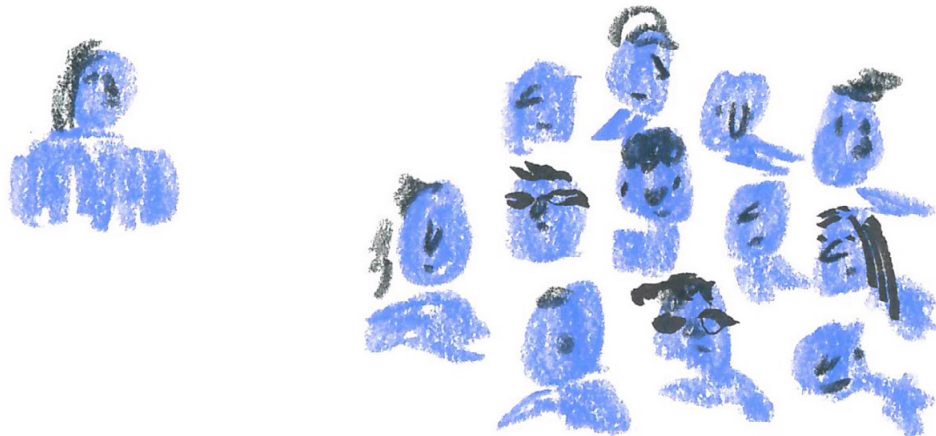
when it is not otherwise possible. In cases where a rural area or urban neighborhood is difficult to reach by bicycle, tram, or bus, workshop participants understood cars to be closing these gaps. In this sense, the freedom offered by cars is not so much the freedom to go wherever one wants to go with one vehicle, but the freedom to become part of a larger network of different means of transportation.

The second set of ideas related to the future of the car can be summarized under the term ‘service car.’ This topic emerged against the backdrop of discussions on self-driving cars. In these discussions, workshop participants agreed that they do not see the cars of the future as their chauffeurs, since they want to remain drivers themselves. Still, self-driving technology could do something for people. Because of digitally enhanced data processing capabilities and improvements in autonomous driving technology, visitors and students of the Ars Electronica Festival envisioned cars of the future taking on tasks humans would not want to do themselves. These include tasks such as finding parking after arriving at a desired destination, driving autonomously to a repair shop, or darkening windows when sunlight disturbs the driver. Beyond these services, workshop participants even imagined cars fulfilling basic human needs, ranging from the need for food to social relationships. When asked to describe their personal vision of a future means of transportation, one group of participants articulated their ideas by saying that they would like to have a car that, “makes friends for you and speaks to you, it [car] includes therapy, it’s bullet proof, there is lots of security on this car, (...) it does crypto mining for you, you don’t really have to work. It makes your meals and also washes your dishes (...). It is also a disco, it plays music for you. It also changes color, to make it not boring.” Regardless of whether these wishes can be fulfilled technically by a car in the future, a quote like the one above shows how the workshop participants have rethought and expanded our current understanding of cars. For them, the freedom offered by the car is not so much about being able to go to different places, but about having a vehicle that serves people and takes care of needs such as connection to others, safety, psychological well-being, food, and cleanliness.

The third way of rethinking the car can be summarized as the ‘modular car’. This vision has been formulated primarily in terms of the physical space that cars occupy. On the one hand, modular cars can save space because they are capable of expanding and contracting. During the week, this car can be just big enough for one person to get to work, while on the weekend it can be expanded and offer room for a whole family. On the other hand, the idea of the modular car is very much related to the expansion of the private and the public dimensions of the car. Participants who imagined the car as a more private space expected that future cars would allow them to easily transform these vehicles into spaces for work, private conversations, leisure activities, such as listening to music, and sleeping. They articulated a sense of security, the ability to “hideaway” from others, acoustic isolation, and the ability to be with selected people as features a car should offer. In particular, people with children repeatedly mentioned how they used the car as an office during the Corona pandemic to be able to work in a focused manner. Workshop participants who wanted to strengthen the public dimension of cars, envisioned a future in which the modular car allows them to connect to the social world around them in a variety of ways. In this regard, one participant described



his vision by saying that this type of car should be made: “more accessible from every side. I would put a little barbecue on the front or a terrace on the roof or more seats. When opening the doors (...) your friends can sit down and to make it [the car] more like a spot where you come together. And you can park it at a place in the nature and open the doors and you have place for 5 to 10 people. And outside speakers and not only this small thing inside.”



PRIVATE  $\longleftrightarrow$  PUBLIC

From a sociological perspective, this description of the car as a quasi-public space is interesting because it shows that a desire to strengthen a rather underdeveloped dimension of these vehicles exists. As the social scientists Mimi Sheller and John Urry note, cars have always been both public and private means of transportation. They rely on public infrastructures like roads, but people sitting in cars do not participate in public space while driving, since “drivers lose the ability to perceive local detail, to talk to strangers, to learn of local ways of life, to stop and sense the particularity of place. The sights, sounds, tastes, temperatures and smells of public spaces are reduced to the two-dimensional view through the car windscreen.”<sup>7</sup> From this perspective, when reimagining the car as a public space for interaction, workshop participants advocate cars that can support local exchange. If we now compare the widespread image of the car as a means of transport that offers freedom of movement by disconnecting one from the environment with this more public vision of the automobile, we can see that instead of delocalization, the idea of the car as a space that allows people to interact with their local environment has come to the fore.

Although not in the same way, workshop participants who wanted to see the private dimension of cars extended also questioned the image of the car as a delocalizing means of transportation. As mentioned earlier, for the workshop participants who

7. Sheller, M. & Urry, J. (2003). Mobile Transformations of ‘Public’ and ‘Private’ Life. *Theory, Culture & Society*. 20(3). p 116.

wanted to strengthen the private dimension of the car, it was not just a means to get from A to B, but it became an extension of their private space that allowed them to do things like work or sleep.

Not directly related to the three visions of the ‘gap filler car’, the ‘service car’ and the ‘modular car’ were reflections on the issue of cars and social status. At various stages of the group discussions, visitors and students to the Ars Electronica Festival reflected on the image of BMW as a luxury brand. In line with established theories of social stratification<sup>8</sup>, workshop participants described owning a car like a BMW not just as owning a means of transportation, but also as owning a car that symbolizes wealth and a high social status. Looking to the future, participants questioned this luxury image of cars. According to the discussions, cars should be accessible to everyone, and as few people as possible should be excluded from high quality goods. As one participant put it, reflecting on what the mobility of the future should feel like to him: “not like you are privileged and elite for having this super-cool experience...[but] like equal, have everyone access it.” What makes this critique of cars as means of social stratification so interesting is that it can be linked to the future visions of the car described above. No matter which of the three versions of the car, in each vision connectedness and interaction played an important role; whether it was the connection to other means of transportation or the connection to friends or the local environment. Combined with the desire to make high quality cars available to everyone, it is apparent that the workshop participants envisioned the cars of the future to be inclusive and sensitive to their immediate environment. These cars of the future will fill gaps in larger transportation systems, meet peoples’ needs – from well-being to nutrition to cleanliness – and help them build relations with their local environments by reducing their size and enhancing their public and private spatial qualities.

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## (DE)DIGITALIZATION OF MOBILITY

As mentioned earlier, the initial goal of the collaboration between BMW and SUPPERSENSE was to start a discussion on how analogue/digital the future of mobility should be. Following this interest, during the four workshops participants were asked to reflect on this topic and share their opinions on the advantages and disadvantages of digitizing mobility.

When discussing the benefits of digitalization for the mobility of the future, participants saw improving the efficiency and safety of mobility as the most important advantages. In terms of efficiency, it was predicted that cars in the future will be more “interconnected”. The workshop participants imagined that advances in artificial intelligence or sensor technology would enable cars to exchange information about their location. This, in turn, would allow cars to adjust their speed to match other traffic or provide drivers with information about busy traffic hubs so they could always choose the most efficient route. Talking about the potentials of interconnected vehicles, one participant

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8. Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. Cambridge, MA: Harvard University Press; Gartman, D. (2004): Three Ages of the Automobile: The Cultural Logics of The Car. *Theory, Culture & Society*, 21(4-5), 169-195.

explained: “If I reach a column of cars and then push the cruise control to just follow the column of cars, and we stop together at a red light and start together at a green light, then you do not have this accordion effect with the traffic jam expanding and detracting”. The interconnectedness of vehicles would therefore guarantee a smooth and efficient flow of traffic. Beyond efficiency, participants also envisioned other digital features being built into cars to increase driver safety. Examples given included cars that won’t start without an alcohol test, eye trackers that monitor driver fatigue or cars that can react if the driver loses consciousness. It was interesting to note that it was predominantly female participants who emphasized the importance of safety features. Realizing that different genders have different needs is important for future car design, as it shows that a desirable driving experience can be linked to many different things, such as the joy of traveling safely.

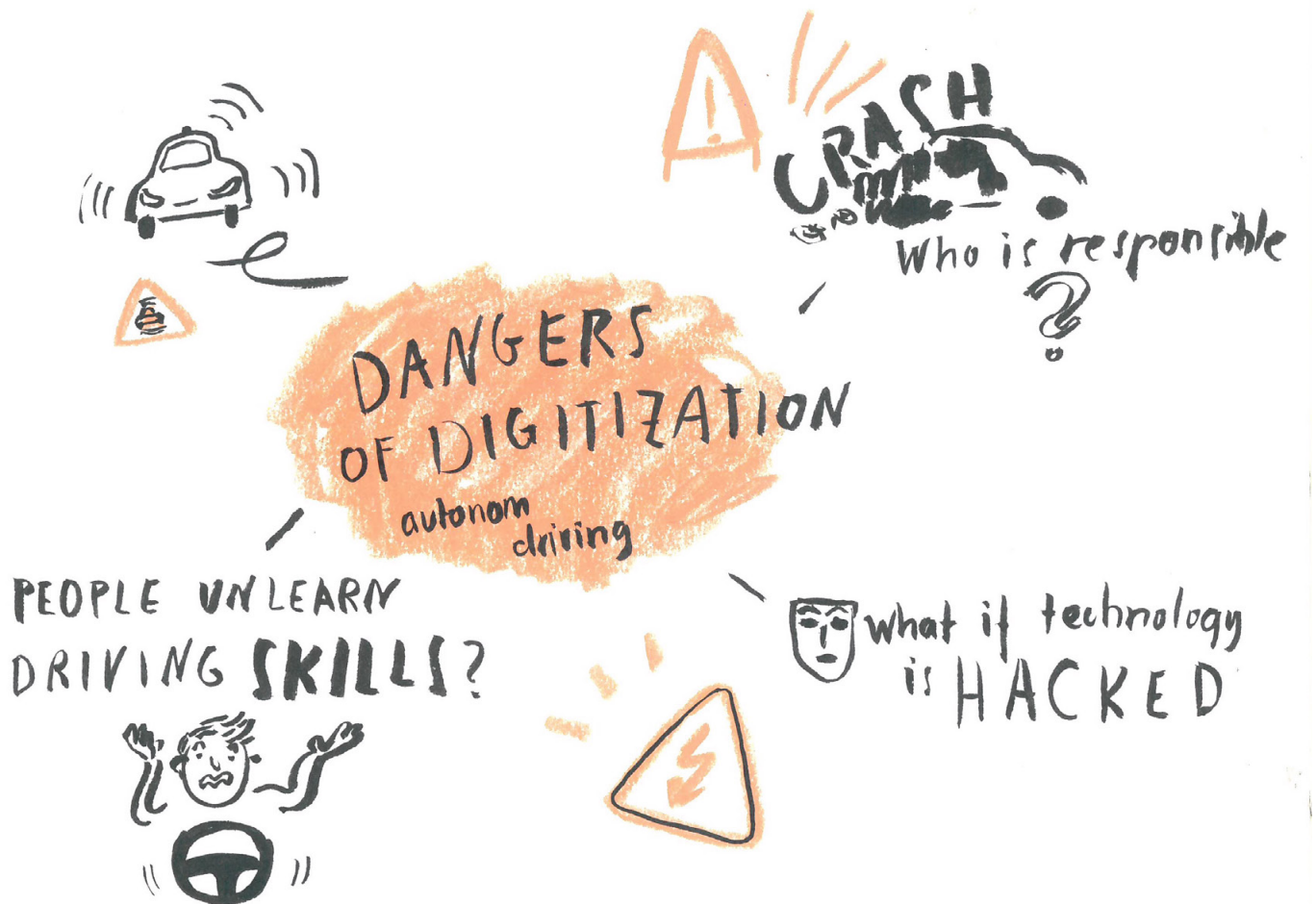


Aside from efficiency and safety, participants discussed how digitalization could lead to a kind of freedom that reverses the logic of freedom typically associated with cars. Instead of being able to move freely from A to B, workshop participants created an image of the future, in which digital technology gives them the freedom of not moving. According to the participants, this is possible because nowadays people can work from home and goods as well as services can be delivered. From an analytical perspective, this is interesting because it shows that home office

options came to the fore during the Corona pandemic. Although the pandemic tied many citizens to their homes, digital tools such as smartphones, computers, the internet, cloud storage and webcams ensured that many companies were able to continue their business even though their employees worked from their places of residence. This apparently functioned so well that home-office remains an option for workers even after Corona lockdowns. In addition, participants noted that digital services such as online shopping and grocery deliveries have provided people with the option of not leaving the home when they need something. Overall, these observations underline that digitalization has drastically changed how and when people need to move, and that notions of mobility-based freedom are associated with the freedom to communicate online, to get things delivered to you, and to stay where you live.

In addition to the benefits, concerns about digitization were also expressed. Many participants saw digitalization as a double-edged sword. Overall, a lot of their concerns can be traced back to the fear of losing control in different ways. First, it was noted that if cars become more connected, a large amount of data will be collected, and individuals would lose direct control over their own data. Questions were raised about who would own this data, where it would be stored, what it would be used for, and how it

could be protected from hackers. Another possibility of losing control was mentioned in the context of self-driving vehicles. One participant stated: “you are controlled by a machine that is controlled by a company; it does not feel very good”. Another participant feared that hackers could influence the routes of self-driving cars, causing serious accidents. Finally, self-driving vehicles were associated with a potential loss of people’s driving skills, which workshop participants understood as an over-reliance on car technology. Overall, the findings just described show that, even though freedom provided by the car and the focus on driving experience are questioned in different ways, workshop participants did not want to completely abandon the idea of the human driver.



Regarding problems of digitalization also ethical questions were raised about accidents caused by self-driving vehicles, which are similar to the well-known ‘trolley-problem’, often discussed in the mass media when talking about the dangers of autonomous driving. Reflections on this ethical problem were expressed in the group discussions when participants raised questions such as: “in between crashing into two bystanders or ending the life of the driver, what should the car choose and who is responsible?”. Since these types of problems are very present in the media and were repeatedly discussed in the workshops, we would like to mention here that focusing on these problems alone can lead to a narrow understanding of the social consequences of self-driving vehicles. Discussions in the field of science and technology studies question the value of the massive investments in self-driving vehicles, as opposed to

improving public transport or the impact of self-driving vehicles on congestion, the environment, or employment<sup>9</sup>. Studies in this area also say that we should be critical when these vehicles are presented as the sole solution for future mobility. Companies that want to sell self-driving cars in the future are portraying their vehicles as fully autonomous technologies that can handle real-world complexity, which social scientist John Stilgoe<sup>10</sup> suggests we should reject. Instead, we should focus more on the social implications of the gigantic modernization needed in car infrastructure to realize the self-driving future. In his words: “Once we reject the story of autonomy, we can more clearly anticipate the politics that may come with the emergence of technology. We can ask who is likely to benefit and what new sources of risk and injustice might arise.”

This latter quote relates to another point of concern raised by the participants: the importance of safe-keeping inclusion. Some participants stated that they already have difficulty understanding and using heavily digitized dashboards today and expressed concern that this problem will only get worse if the trend of digitalization continues. Therefore, they stressed that older people should be taken into account in the development of future cars, since they will find it even harder than the participants to adapt to new technologies. If this does not happen, further increasing digitalization could have the effect of excluding people from participating in mobility. Others doubted the safety of installing more digital technologies in cars, especially with regard to screens. Workshop participants shared their experiences of finding current dashboard screens distracting rather than helpful and expressed that car manufacturers should think about ensuring that any technology integrated into the car should not distract from safe driving.

Linking these concerns of the participants to the question about the relationship between analogue and digital technology shows that increasing digitalization of mobility must be approached carefully. It also shows that widespread visions of advances brought about by digital technology, such as self-driving cars, are not only welcomed but cause for worry.

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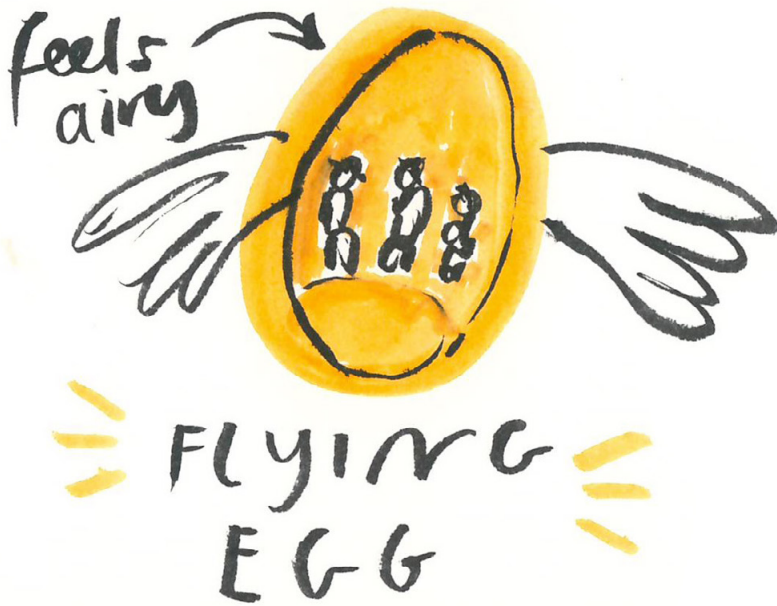
## BEYOND THE CAR

Since the workshops also aimed to generate discussions about mobility beyond the car, participants were asked to reflect in groups on their visions of individual mobility in the future, no matter how (un)realistic they were. In order to structure the descriptions of the reflections that took place during the workshops, the more utopian visions are outlined first, followed by visions of the future of mobility that are more closely linked to means of transportation that exist already today.

The more utopic visions about the of future mobility were in line with technologies depicted in science fiction stories and movies. Ideas put forward by the participants include robotic suits like Iron Man`s, teleportation platforms, flying cars, drones that carry people around, or spaceships. One of the most creative visions was expressed by

9. Crawford, K., & Calo, R. (2016). There is a blind spot in AI research. *Nature*, 538(7625), 311-313.

10. Stilgoe, J. (2017). Seeing like a Tesla: How can we anticipate self-driving worlds. *Glocalism: Journal of Culture, Politics and Innovation*, 3, 1-20.



a participant who described her idea of a spaceship as: “Flying eggs or a saucer where you are sitting and have all these commodities like working in it, but you can also be with other people in there and it completely autonomously brings you from point A to B. It would be a bit more like air-traffic, so it doesn’t need the normal roads. It is outside of your place and can take you from point A to point B [...] and most of it is made from glass so you can see what is happening outside”. From a social science perspective, this presence of science fiction ideas is not surprising. Accord-

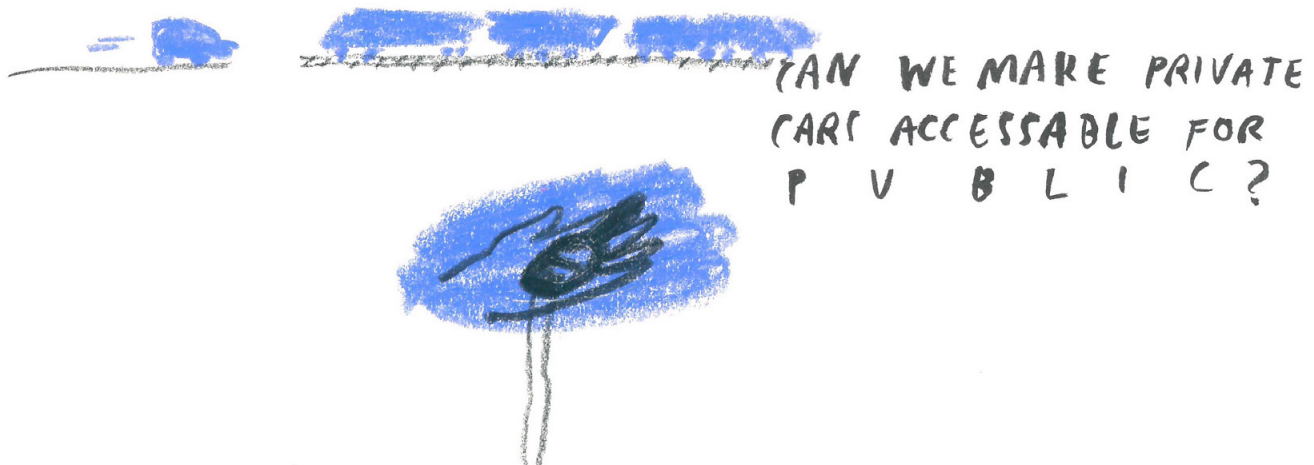
ing to Miller and Bennet, science fiction helps people orient themselves by enhancing their ability to reflexively evaluate the social implications and dynamics of new technological systems.<sup>11</sup> Also, these visions show how pervasive science fiction is in our society and how often we base our shared way of imagining the future on visions disseminated through mass media. Another finding is that even in their most creative visions of future mobility, participants envisioned utopian vehicles similar to how they rethought the role of the car. As with the modular and service car mentioned above, utopian visions also described means of transportation that provide space for retreat and social connections, such as the flying egg which offers space for work and for togetherness with others. This shows how strong the desire is for vehicles that can fulfill demands beyond the freedom of moving from A to B.

In the visions of the mobility of the future more oriented toward the technologies available today, workshop participants often imagined that public transport systems would become more important. However, these are not necessarily the transport systems we are familiar with today, such as buses and streetcars, but rather public transport that has characteristics of individual transport. One group of participants described this type of future vision of public transportation as one in which private ownership would be abolished and cars would be fully interconnected and electric. A centralized system, accessible to all via an app, would control autonomous vans (with up to 7 seats, as the vehicles in such a system would be expected to have more seats than a traditional car) to get people from point A to point B. People traveling the same route would be picked up together, creating a public transportation system with the flexibility of individual transportation. Another group described redesigning cities into “smart districts” that would drastically reduce car traffic within the city. They envisioned cities with green trails for pedestrians, electric scooters, or bicycles, and designated spots where shared-use cars could take people to specific destinations.

11. Miller, C. A., & Bennett, I. (2008). Thinking longer term about technology: is there value in science fiction-inspired approaches to constructing futures?, *Science and Public Policy*, 35(8), 597-606.



Compared to the classical notions of mobility associated with cars, mobility becomes more of a common good in these realist utopias. Instead of enjoying driving in their own vehicles, participants described the future of mobility in these scenarios as one in which people would enjoy the freedom associated with more space in cities or sharing mobility with others. Other commonalities among the visions are that they are green, inclusive (both in terms of age and with regards to rural and urban dwellers) and more tailored to the needs of the individual.



However, participants also immediately recognized that radical changes to mobility systems would be difficult to implement in current democratic capitalist societies. As a result, participants were reluctant to leave the car behind entirely, even when being encouraged to imagine any kind of future of mobility one could think of. One participant stated: “I think that cars are not going to disappear, and I believe my argument is more looking at the infrastructure. At the moment, it is too big. I don’t see that all these highways are disappearing. Maybe something else is going to drive through the highways, but I think it is going to be reminiscent of something having wheels”. Other reflections on the difficulties of imagining a world without cars were related to geographical locations. When discussing the vision of expanding public transportation, it was mentioned that this type of transportation cannot replace cars in all parts of the world. This reason is that public transportation would not function smoothly in areas of the world that do not have the necessary infrastructure, ranging from a culture of public service to the financial resources to manage the implementation and maintenance of a public transportation system.

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# CONCLUSION: THE MOBILITY OF THE FUTURE AND NEW DESIGN PERSPECTIVES

The goal of this report was to summarize and analyze the results of several workshops on the mobility of the future. In these workshops, which were jointly developed by SUPERSENSE, BMW, the Ars Electronica Futurelab and sociologist Bernhard Böhm, students and visitors to the Ars Electronica Festival 2022 reimagined meanings of mobility and developed new visions for getting around in the future. During the discussions about the future, especially the common image of the car as a source of individual freedom, where the driving experience is paramount, was challenged in various ways.

In one vision that was prominently discussed by workshop participants, the car was no longer an individual means of transportation, but a `gap filler` that is part of a larger network of different means of transportation. In some versions, workshop participants' visions even went so far to describe car fleets as part of a centrally controlled public transport system. From a sociological perspective what happened is that the group discussions resulted in participants rethinking the role of the car. According to the sociologist Sheller and Urry, students and visitors to the Ars Electronica Festival repositioned the car, no longer understanding it as the dominant culture of mobility as it had been in the 20th century<sup>12</sup>. When considering car design from this perspective, it is important to realize that rethinking the role of the car also did something to ideas about what a car should be. In the workshop participants' visions of the future, cars are no longer about individual drivers going wherever they want whenever they intend to do so. Instead, they envisioned cars of the future offering the freedom to interact with others and expand public space by, for example, providing a barbecue or extra seating. They also imagined cars that are responsive to their context and drivers' personal needs, as they are able to adapt in size, to provide service to people by, for example, driving themselves to the auto repair shop, serving food, offering therapy or being a space for retreat. While some of these visions may never be technically realized, they show that workshop participants wanted more from a car of the future than a joyful driving experience. They also wanted experiences of social interaction and connectedness, safety, well-being and service.

Another finding is that the visions of autonomous driving expressed by various mobility industry players in advertising were not necessarily desirable for students and visitors to the Ars Electronica Festival. Of course, the workshop participants did not view autonomous driving technology only negatively and they could imagine situations in which they would like to be picked up by a self-driving car, for example after a party. In their more utopian visions, participants could even imagine to be driven around by an autonomous flying egg. However, they repeatedly emphasized that the idea of being driven around by computer-controlled cars is problematic, as it would make them lose control.

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12. Sheller, M., & Urry, J. (2000). The city and the car. *International journal of urban and regional research*, 24(4), 737-757.



This distanced relationship to self-driving vehicles was also reflected in the participants' thoughts on digital technology. Instead of digital systems taking control away from humans through autonomous driving, the participants believed digital technology should rather support travelers. One option for how this support could be realized in the future was by sharing more information about the whereabouts of automobiles, which participants said could become possible thanks to advances in artificial intelligence technology. In this way, cars could adjust their speed limits to match other traffic or provide drivers with live information about busy intersections, so they have the joy of efficient and smooth transportation. Another vision was related to the freedom of not having to move. Against the backdrop of advances in digital communication technologies and the platform economy, where goods and services are ordered online and delivered, workshop participants envisioned the mobility of the future as one where people will move less and spend more time at home and in their neighborhoods.

The workshops also showed that gender, age and location matter and that it is important to think about for whom the future means of mobility will be developed. Therefore, the participants should not be understood as a homogenous mass, but as a diverse group of people. In terms of gender, it was primarily the female participants who described the future of mobility as one that should be safe. With respect to age, advancing digital technology was seen as problematic for older people who do not have the knowledge and skills to use digital interfaces. In terms of location, workshop participants noted that not all the visions discussed could be implemented in every place in the world. For example, when discussing the vision of expanding public transportation, it was noted that this would only work smoothly in regions of the world that could provide the necessary infrastructure for this expansion.

Finally, the workshops showed that utopian visions of future mobility are mostly based on images disseminated through media of popular culture, such as comics, TV series and movies. Whether it is flying drones transporting people or the "Iron Man" suite, most of the visions that go beyond adapting today's means of transportation are already known through popular culture. On the one hand, this shows how powerful mass media are when it comes to shaping our perceptions and ideas. On the other hand, it underscores the importance of professional design.

To go beyond what is known, we need people who can synthesize perspectives, create new visions and respond to societal changes. Probably more than ever, this means dealing with different options and contradicting demands that arise in our complex societies. When listening to the visitors and students at the Ars Electronica Festival it was striking in how many ways the popular image of the car was called into question. Although no design can include all the different and at time contradicting visions, desires and demands that are part of our future imaginations of mobility, it can learn from the contradictions. For future mobility, this could mean thinking about vehicles that have private features while being connected to the public realm or about means of transportation that take care of passengers' needs while leaving control to them.

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## LITERATURE LIST

- Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. Cambridge, MA: Harvard University Press;
- Gartman, D. (2004): Three Ages of the Automobile: The Cultural Logics of The Car. *Theory, Culture & Society*, 21(4-5), 169-195.
- Crawford, K., & Calo, R. (2016). There is a blind spot in AI research. *Nature*, 538(7625), 311-313.
- Dant, T., & Martin, P. (2001): By Car: Carrying Modern Society. In: A. Warde, & J. Grunow (Ed.). *Ordinary Consumption* (pp. 151-166). London: Routledge.
- Dant, T. (2004). The driver-car. *Theory, culture & society*, 21(4-5), 61-79
- Jasanoff, S., & Kim, S. H. (Eds.). (2015). *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*. Chicago: University Press.
- Krueger, R. A. (1994). *Focus Groups*. London: Sage Publications.
- Miller, C. A., & Bennett, I. (2008). Thinking longer term about technology: is there value in science fiction-inspired approaches to constructing futures?, *Science and Public Policy*, 35(8), 597-606.
- Redshaw, S. (2017). *In the company of cars: Driving as a social and cultural practice*. Boca Raton: CRC Press.
- Sheller, M. (2004). Automotive emotions: Feeling the car. *Theory, culture & society*, 21(4-5), 221-242.
- Sheller, M., & Urry, J. (2000). The city and the car. *International journal of urban and regional research*, 24(4), 737-757.
- Sheller, M. & Urry, J. (2003). Mobile Transformations of 'Public' and 'Private' Life. *Theory, Culture & Society*. 20(3). p 116
- Stilgoe, J. (2017). Seeing like a Tesla: How can we anticipate self-driving worlds. *Glocalism: Journal of Culture, Politics and Innovation*, 3, 1-20.
- Thrift, N. (2004). Driving in the City. *Theory, Culture & Society*, 21(4-5), 41-59.
- Volti, R. (2006). *Cars and Culture: The Life Story of a Technology*. Baltimore: The Johns Hopkins University Press.

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