

Developing disruptive  
norm-critical innovation  
at Volvo  
**FINAL REPORT**

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Developing disruptive norm-critical innovation at Volvo: Final report

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## Abstract

Volvo Group Trucks Technology and Tema Genus, Linköping University, have initiated a collaborative project to foster disruptive norm-critical innovation at Volvo. The aim is to 1) further develop existing methods for initiating innovation by bringing disruptive norm-critical innovation methods into already existing “tool boxes for innovation” at Volvo, 2) develop a particular tool box to enhance disruptive norm-critical innovation across existing “tool boxes”, and 3) develop a disruptive norm-critical innovation tool box targeting the leadership programme at Volvo Trucks to enable better management and integration of norm-critical innovation processes at Volvo. The first step was a pilot project, outlined below, the overall aim of which was to develop a detailed application (VINNOVA) which can achieve the above aims.

## Acknowledgements

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## Introduction

Volvo Trucks has set the goal of becoming a world leader in sustainable transport solutions. In order to reach this goal, the company faces an innovation challenge. What is needed, according to Daniel Zackrisson, Technology and Project Planning Manager at Volvo Group Trucks Technology, is for Volvo to drive “radical innovation”. This implies that, in the long run, Volvo Trucks needs to become sustainable in an economic, ecological and societal sense. This challenge generates a need to engage critically with the prevailing norms that often guide planning processes, limiting what it is possible to imagine in relation to the genders, bodies and abilities of users. Hence, in order to succeed in the ambition to become a world leader in sustainable transport solutions, Volvo first needs to challenge the status quo within its own organisations. Zackrisson notes that Volvo’s working hypothesis is that the majority Volvo engineering culture can be understood as a conservative force, slowing down the journey towards this vision. In the short run, by developing norm-critical innovation, Volvo’s existing toolboxes can be altered and extended. In the long run, the engineering culture can be transformed in a much more fundamental way. This pilot project is a stepping-stone towards this goal.

The project *Developing disruptive norm-critical innovation at Volvo* focuses on future designs of long-haul trucks and their potential users. One goal is to develop “trucks for all”, trucks that may be used by a broader range of users than today. In popular culture, trucking is typically portrayed as embedded in a masculine culture. Truckers may be imagined as “road cowboys” living a “free” life on the open road. When imagining a long-haul truck and its driver, typically one thinks of a strong, masculine, able-bodied, working-class man, on average 25–50 years old (Hamilton 2008: 189). In other representations, such as Volvo’s own commercial, “Epic split”, technological perfection is illustrated in a typically masculine way<sup>1</sup>. The commercial stars the martial arts action film actor and director Jean Claude Van Damme, performing “the most epic split” between two reversing trucks. Here the hi-tech Volvo truck, the engineers behind it and its preconfigured user are all hyper-masculinised through an association with Van Damme’s physical performance and risk-taking abilities. However, due to disruptive norm-critical innovation at Volvo, this image is set to change. “Disruptive” refers to innovative methods that actively engage with planning and design processes while “disrupting” traditional methods of planning and designing trucks, including rethinking the scripts that govern the design process and scrutinising unquestioned

norms about the preconfigured user. The project is inspired by disruptive norm criticism (Kumashiro 2002), and has brought in a diversity perspective to include gender, dis/ability, LGBTQ, age and environmental issues into the analysis and further development of tool boxes at Volvo. It is also inspired by Science and Technology Studies scholar Madeleine Akrich’s critical reflections on how norms are built into scripts which orient technology designs towards certain preconfigured users rather than others (Akrich 1992).

Key to the project is new innovative technology allowing trucks to become more “autonomous” than has previously been the case. *Autonomous* means that the truck is designed and programmed to carry out some of the tasks that were previously assigned to the driver, for example, driving. However, even though autonomous trucks are also known as “driverless” trucks, this is not really an accurate description: a human driver is still behind the wheel ready to take over in more difficult road situations, such as inner city driving or in case of emergency. Autonomous vehicles, or “Highway Pilots”, as Volvo and other truck manufacturers call them, are currently being discussed as problem-solvers around issues regarding road safety and to relieve the driver from the sometimes tiresome and boring act of driving. With autonomous vehicles, agency is shifted from the driver to the car/truck and its designers (Weyer 2006, Both & Weber 2014). As the designer of future trucks, Volvo needs to consider how automation and related systemic changes may come to fundamentally challenge contemporary motor cultures and dominant views on driving, mobility, gender and bodies, including sociality and everyday life in and around trucks, as well as the communities/societal contexts in which trucking now or in the future is expected to become embedded. But when technology does the driving – what should the drivers do?

Against this background, Volvo Trucks and Tema Genus, Linköping University, have initiated a collaborative project to encourage disruptive norm-critical innovation at Volvo. The aim is to 1) further develop existing methods for initiating innovation by bringing disruptive norm-critical innovation methods into already existing “*tool boxes for innovation*” at Volvo, 2) develop a particular tool box to enhance disruptive norm-critical innovation across existing “*tool boxes*”, and 3) develop a disruptive norm-critical innovation tool box targeting the leadership programme at Volvo Trucks to enable better management and integration of norm-critical innovation processes at Volvo. The first step was a pilot project, outlined below, the overall aim of which was to develop a detailed application (to VINNOVA) which can meet these aims. The future goal that this project has generated is to work collectively to set up a consortium to develop a new concept truck at Volvo Trucks.

<sup>1</sup> <https://www.youtube.com/watch?v=M7F1vfx5J10>

In the following, we first outline the methodological approach of this pilot project. After this, we outline the two workshops in more detail: What was it about? How was it carried out? Who took part? The report concludes with a summary of outcomes, a discussion and notes on future collaborations.

## Methodology: disruptive norm criticism

The pilot project used a workshop method to gather three parties: 1) relevant Volvo staff (key staff involved in product design and the management of design processes at Volvo Trucks), 2) unexpected stakeholders (activists from norm-critical social movements or NGOs working with norm-critical practices within frameworks defined by, e.g. LGBTQ; feminism; dis/ability issues and age, and 3) a research team from Tema Genus, Linköping University. Two one-day workshops were organised at Volvo with inspiration from 1) the Future Workshop format (Jungk & Müllert 1987) and 2) the World Café format (Vogt, Brown & Isaacs 2003). Both of these embody radical democratic values, and have been used in activist and NGO circles.

*The Future Workshop format* (Jungk & Müllert 1987) aims to collectively identify problems and, against this background, create change in communities, organisations, for example workplaces, and even in society at large. Important tools include operating with a flat, democratic structure, where all voices count equally, and stimulating the unfolding of social fantasy and creativity. In this project, the Future Workshop was used to promote norm-critical and disruptive design formed around the theme of “self-driving, autonomous” trucks, and the “Highway Pilot”. The workshop facilitated the creation of a democratically organised meeting-space between the three above-mentioned parties, who came together to commit themselves jointly to the workshop process, which is intended to foster innovative ideas, based on norm criticism, and suggestions for implementing them.

The Future Workshop format includes three phases: a critique phase, a fantasy phase and a making-real phase. In the critique phase, participants write down on flipcharts (for everyone present in the room to take a look at) all the critical points they can think of in relation to the topic of the workshop. After this, a collective prioritising of the most important critical points follows. These points are then used as background for the launching of the fantasy phase, starting by turning the critical points “upside-down”, i.e. making them into visions of how to do things totally differently, in this phase without considering what is possible. In the fantasy phase, the question of how

to realise the visions is not allowed. Instead, “wild” fantasies are encouraged; “the crazier, the better” is the key approach to the fantasy phase. Social fantasy is stimulated in this way. Finally, the making-real phase aims to discuss how to actually incorporate and implement the ideas generated into the community/organisation/workplace. The point at this stage is not to take forward all the visions from the fantasy phase, but to focus on ideas about how to make, or start to make, at least some of the ideas real in some form or another.

*The World Café workshop format* (Vogt, Brown & Isaacs 2003) aims to enable “engaging collective intelligence through conversations about questions that matter” to the participants ([www.theworldcafe.com](http://www.theworldcafe.com)). In this project, the World Café format was used to facilitate engaging discussions on what a norm-aware/critical/creative design process might mean and to lay the groundwork for future developments at Volvo Trucks. The format involves the creation of flat and democratic discussions about themes and questions which engage all participants, sustained by a playful, café-like environment and encouragement to let all voices be heard and all ideas be noted. In this project, the format was used to raise new, powerful questions about the managing of design processes, including thinking about the future context in which such trucks may be used and by whom. In order to do so we used a case scenario, called Syria 2025, suggested by the Volvo staff. Within Syria 2025, the assumption was made that the current civil war is over, and reconstruction is ongoing. The challenge was to think through how Volvo, in this situation, could build a cabin that allows non-preconfigured users, for example, a person with disabilities, to work efficiently as a driver.

Through workshops, based on the two formats described above, and bringing together Volvo engineers and designers, gender scholars and unexpected stakeholders/activists, this pilot project aimed to plant a seed for the integration of norm-critical innovation processes at Volvo. The idea was that the unexpected stakeholders/activists and the gender scholars should bring to the discussions their views on what they think about and how they are affected by designs as they are, and, moreover, that they should participate together with the engineers and designers in the process of rethinking and generating ideas for alternatives. The involvement of unexpected stakeholders and gender scholars includes the possibility of demands being made from their perspectives on Volvo and design development.

In order to facilitate the process, prior to each workshop, the research team had set up an online meeting, in order to give the participants from outside Volvo the opportunity to be further introduced to the project in general and the upcoming workshop in particular. In short, participants were introduced

to the workshop formats and the cases (The Highway Pilot and Syria 2025). Apart from being introduced to the cases in greater depth, the instructions were: “come as you are”.

With the term “norm critical”, we highlight the often invisible and unconscious norms that guide planning processes – and may lead to the privileging of certain perspectives over others (Kumashiro 2002; cf. Mörck & Petersson McIntyre, 2009; Petersson McIntyre, 2010). Having said this, the workshops not only provided a venue to critique norms, but also created norm-awareness and facilitated discussions on how norms can be played with and displaced in creative ways. Below, we present a documentation of the two workshops that took place at Volvo Trucks, Gothenburg, Sweden.

## The Future Workshop

The first workshop to be held within the project took place as a one-day event at Volvo Trucks in Gothenburg in April 2015 (a two-hour workshop, joint lunch, and a one-hour evaluation and planning for the next workshop). Prior to the workshop, the organising team of Nina Lykke, Dag Balkmar and Daniel Zackrisson had met online to plan the event. In order to attract unexpected stakeholders to the workshop, the Tema Genus team had advertised it to students on Tema Genus’ master’s programme in Gender Studies – Intersectionality and Change, several of whom have an activist background, as well as to RFSL (The Swedish Federation for Lesbian, Gay, Bisexual and Transgender Rights) in Gothenburg and to key scholars at Linköping University working with norm-critical issues. However, we also decided not to make the group too big for this first session, as we considered it important to get to know each other. In total, four participants from Tema Genus and five Volvo staff members took part in the first workshop at Volvo GTT innovation lab in Gothenburg.

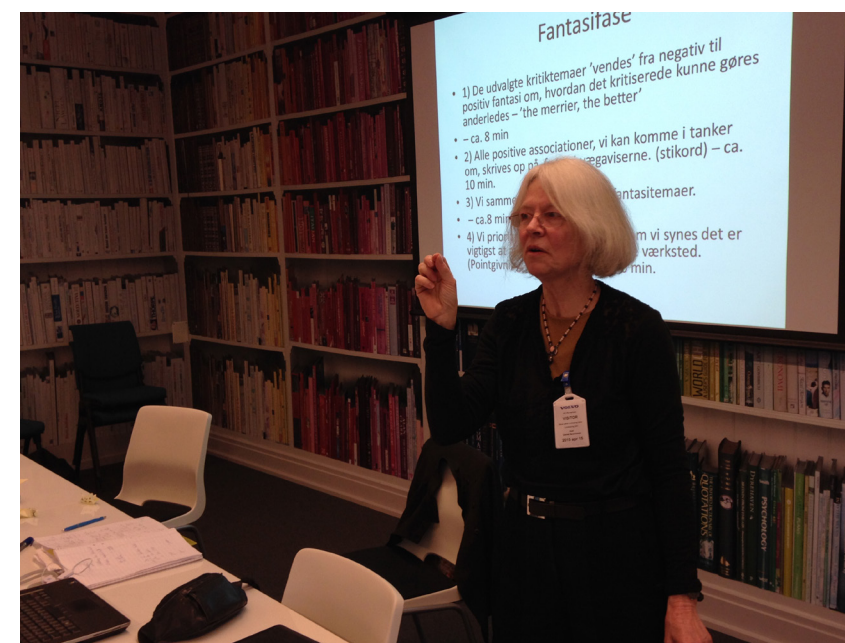
### How and what?

Daniel Zackrisson introduced the participants to Volvo Group Trucks Technology, and to the themes for the two planned workshops (case 1, the cabin of the “autonomous” truck, the Highway Pilot, and case 2, Syria 2025). After introducing the group to each other and to the innovation challenge that Volvo is currently facing, Nina Lykke presented the Future Workshop format in more detail, and led a two-hour workshop based on it.

The format of the Future Workshop was thus used to move from norm-

critical scrutiny of present truck designs (critique phase) to more future-oriented dreams around the theme of self-driving/“autonomous” trucks (fantasy phase) and, finally, to discussions about how to make new designs that use the dreams as inspiration, but take sociotechnical realities into account (making-real phase).

In the first phase (critique), the participants were asked to put all their concerns, doubts and critical thoughts regarding self-driving trucks on post-it notes and put them on the wall for all to see. The critique phase functioned as the catalyst for the next phase (fantasy), which was designed to enable participants to turn their concerns and critiques “upside-down” and generate fantasies about how build, organise and use self-driving trucks differently. When all possible negative concerns had been put on post-it notes on the wall, the time was ripe for moving on to the fantasy phase, encouraging the participants to think outside the box, while the last phase, the making-real phase, connected the two previous phases by facilitating the development of ideas about possible ways to start working towards the alternatives. Each phase was 40 minutes long, and the participants were split into three groups (two Volvo staff members and one gender scholar/activist in each).



*Project leader Prof. Nina Lykke. Photo by Dag Balkmar.*

### Three phases: critique, fantasy and making real

The general idea behind the critique phase is, as noted, that negative, critical viewpoints are encouraged. The idea is that by “clearing the air” in terms of articulating frustrations, anger, irritation, etc. vis-à-vis present conditions, the way is prepared for a dedicated focus on positive ideas in the ensuing fantasy phase. At Volvo, the group participants (Volvo staff, activists, Tema Genus researchers) were asked to all individually note keywords on post-it notes and put them on posters for everyone to read. The writing was followed by a few minutes for reading for everybody to become acquainted with everybody else’s keywords. Finally, each participant was asked to prioritise three critique keywords through voting. The voting procedure ascribed the activists/Tema Genus group five votes each and Volvo staff three votes each. Volvo staff were asked if they wanted five votes as well, but they agreed that the uneven voting procedure would challenge their dominance in setting the scene. They said that this was precisely what they wanted from the workshop, so they were happy to give more influence to workshop participants coming from “outside”. The voting led to a choice of three critique themes to take further in the fantasy phase. These were: “Confusion about when the driver is on duty and when on break”; “Health problems”; and “Trust/Social interaction”.



*Volvo co-workers with Daniel Zackrisson in the middle.  
Photo by Dag Balkmar.*

The next step was to turn the three critique themes upside down. Now the participants were asked to focus on positive ideas, with a starting point in the critique themes, and to turn these around into positive fantasies about doing things differently. The lead motif was now “the sky is the limit”, and participants were urged, for a moment, to forget about “reality” and what they actually deemed possible. Or, in other words, they were strongly encouraged to think outside the box, the wilder the better. All ideas were noted on post-it notes and put on the wall for everyone to read. Towards the end of the fantasy phase, participants were again asked to mark keywords/sentences they wanted to prioritise and bring them along to the last phase – the making-real phase.

The making-real phase was launched with a focus on the question: how can Volvo benefit from the workshop ideas developed in the fantasy phase? Which of the ideas developed in the fantasy phase could be taken further in some way? Due to lack of time, this phase was carried out in the full group and only focused on some aspects – such as the possibilities of enabling truck drivers’ social interaction with the help of ICT. Other aspects from phases 1 and 2 demanded more time for reflection: particularly the theme “life in the cabin”, which dealt with the future design of truck cabins for other kinds of users and scripts than the preconfigured ones – something that it was agreed should be a key theme for the next workshop.

### The World Café Workshop

When evaluating the first workshop, the team decided that the next one should revolve around a specific case and involve more unexpected stakeholders (activists/students/researchers) to facilitate more critical perspectives, but also more Volvo staff. To meet this goal, for the second workshop the language was changed from Swedish to English, which made it possible to attract more participants both from Tema Genus’ international master’s programme and from Volvo. All in all, 18 participants with a wide range of ethnic, national and disciplinary backgrounds met to participate in the World Café workshop in May 2015, which was structured in the same way as the first one (a two-hour workshop, joint lunch, and a one-hour evaluation and planning for the next workshop). The Volvo team consisted of staff working with tools and methods for increased creativity, product design, advanced technical development, public transport solutions, high-capacity transport, and relations between driving and resting. The Tema Genus team/activists had activist backgrounds within the LGBTQ movement, and/or had in-depth experience of norm-critical work from various contexts, including interactive research projects in organisations.

## How and what?

The workshop was led by Dr Ann-Charlott Callerstig, an expert in gender and organisation, with long experience of working with gender equality/diversity issues in organisations. Ann-Charlott introduced the World Café methodology and explained that the method had emerged from research and studies on processes of change. Through this methodology, new creative ideas about complex problems may be generated in situations that differ from traditional meetings or meeting rooms. In this case, the ideal creative space is the coffee room. The idea was to move away from the restrictive thinking mode that “we need to solve a problem” to a more creative way of thinking about problems in a less formal venue, such as the café.

Part of this methodology involves a number of presumptions: one is that the participants are considered to be “critical friends” of the organisation they are part of. This means that the critique put forward is considered to support the organisation and is articulated with the ambition of changing it – not simply to criticise it. Another assumption is that “the wisdom is in the room”: the solution to a problem is considered to lie amongst the participants. Apart from these aspects, it is emphasised that the participants should have fun, listen to each other, and try to hear everybody’s perspectives on the problem/case under discussion.

## The case: Syria 2025

Before the workshop, a specific scenario had been circulated to the participants, i.e. the “Syria 2025” scenario mentioned above. This scenario was designed as a creative engine for the group. Formulated by Daniel Zackrisson at Volvo, the Syria 2025 scenario was discussed beforehand in the project group, and agreed upon as a tool for expanding the focus from gender and sexual identity to include other intersections more urgently, for example dis/ability issues. The background material outlined below introduces not only the specific “Syria 2025” case, but is also an example of the way in which Volvo Trucks, as a part of its general business model, frames what is called “corporate social responsibility (CSR)” as defined, for example, by UNIDO (United Nations Industrial Development Organisation) as: “a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders (...) and the way through which a company achieves a balance of economic, environmental and social imperatives (‘Triple-Bottom-Line-Approach’), while at the same time addressing the expectations of shareholders and stakeholders” (UNIDO 2015).

The case description below was circulated to the participants of the second workshop. Daniel Zackrisson at Volvo Group Trucks Technologies put the case together and parts of it refer to material published on Volvo Trucks webpages:

### Scenario 2: Syria 2025

The war is over, reconstruction is ongoing. Can Volvo build a cab that allow a person with disabilities to work efficiently as a driver?



*Concept outline from Volvo Trucks*

- Volvo has taken many steps over the years to build an ever more ergonomic cabin. However, this work usually assumes that the driver is an able-bodied male in his 40s. Over the last ten years, this “model driver” has been altered a bit, and now we assume a range of drivers of various heights, strengths and levels of endurance. Still, we have not yet extended the configurability of the cabin so far as to include individuals with major disabilities. The able body is still a norm. This norm excludes a range of individuals. It should be challenged and that is what this scenario is all about.

- Below is an example of innovations that have allowed more drivers to stay in the profession longer, in a sense challenging the “able-bodied truck driver” norm.
- The seat is hydraulic, absorbing almost all force from shocks resulting from irregularities in the road surface (good for all drivers, especially those who are overweight and older).
- The steering wheel has an electric motor, “servo”, with several settings. It is now possible to steer the vehicle with very little force (you no longer have to be particularly strong to drive; older drivers, who used to complain about shoulder ache after long days at the wheel, can be included).



- Lane-keeping assistance. Reverse cameras, other driver assistance systems. (This makes it easier for drivers to see what is happening around the vehicle and avoid incidents & accidents).
- Why Syria?
- Apart from the three core values (safety, quality & respect for the environment), Volvo has over the last decade embraced its role as a responsible corporate citizen: <http://www.volvotrucks.com/trucks/global/en-gb/values/responsibility/Pages/Responsibility.aspx>
- Being a responsible corporate citizen is inherently good and the right thing to do. It includes respect for the environment but also assuming part of the responsibility for the economic and social reconstruction of countries that have been through a major crisis. Along these lines, Volvo currently sets up vocational training in emerging economies. <http://www.volvotrucks.com/TRUCKS/GLOBAL/EN-GB/VALUES/RESPONSIBILITY/Pages/Educationandtraining.aspx>. This makes economic sense as well, since economic recovery after a crisis is likely to also boost the demand for Volvo products such as trucks, buses and excavators.
- So why Syria in 2025?
- Well, first of all, vehicle development takes time. So by setting the time frame to 2025, we allow some time for new innovations to make the journey from early concepts to a mature product.
- Secondly, Syria is currently undergoing one of the worst humanitarian crises on the planet. There is no way of telling if the country will be on the road to recovery by 2025. This is an optimistic scenario though; assuming recovery is ongoing, Syria 2025 is likely to be a place where a lot of disabled people of working age might be desperately looking for a job. By selecting an emerging market, we also make the scenario more challenging. After all, adapting a standard cabin is expensive. By choosing a market that is likely to be price sensitive, we create a scenario where we must pay close attention to product cost at the same time as we explore novel ergonomic concepts to include disabled people into the pool of eligible drivers.

As noted in Volvo Trucks' case description, above, the scenario, Syria 2025, assumes that the present war is over, and that reconstruction is an ongoing process. The key question is whether Volvo Trucks can build a cabin for the Syria market that allows untraditional users, for example, people with disabilities, to work effectively as drivers. To facilitate a cabin that does not take the model driver for granted demands thinking beyond the able-bodied male norm. For Syria, and similar markets, there is a need to think through, for

example, the forms of disabilities with which future drivers may be working. Or, more to the point, what might today stop people with disabilities, amongst others, from operating the truck as it is currently on the market?

Part of the challenge for Volvo Trucks is to demonstrate corporate social responsibility, including the ability to facilitate the reconstruction of the country, *in casu*, Syria, more generally. One way is to think about and include regional competences when developing trucks. The scenario is intended to show that, by entering the arena early, and by involving people living in the area as part of this process, a more robust reconstruction encompassing both economic and social values could be reached.



*Presentation from a group discussion. Photo by Dag Balkmar.*

### Session 1: Truck, design and organisation

The workshop was organised around café tables with paper, pens, sweets, coffee and fruit. Six people sat around each of the three tables, including a table host who kept track of the discussions. The time was divided into two sessions, each with its own set of questions. After ten minutes of discussion, the participants switched tables; the host remained seated to explain to the newcomers what had previously been discussed. During the session, each participant was encouraged to write and draw on the flipcharts. The last group helped the table host to sum up the discussions. Each table focused

on different questions related to the scenario, namely the truck, the design process and the organisation. Below are the questions that each table was to discuss under each theme:

1. **TRUCK:** What is the role of trucks in post-war Syria 2025? What do you think a truck that works for all would look like? How can Volvo Trucks become an actor to support the development of trucks that work for all? Which needs/bodies have to be taken into account in developing trucks for Syria 2025?
2. **DESIGN PROCESS:** How can different needs/bodies be taken into consideration during the design process? What are the most important differences from today's process?
3. **ORGANISATION:** What is most important for supporting novel thinking and innovative, norm-aware design? What is needed to create a more norm-aware development process?

The following text is a summary of the group presentations following these three themes.

*Truck:* Much of the discussion revolved around the cabin and the driver's environment. In relation to the Syria 2025 case and possible disabled bodies at work, access to the driver's seat remained a crucial aspect for many participants. Key is the idea that you are often more able to adapt to an underperforming design if you are able bodied, but also that the design *de facto* may exclude users with certain kinds of disabilities, when access, for example, involves heavy lifting or specific techniques for getting in and out of the truck. Current truck designs make it rather hard to get to the seat with their high steps. In fact, climbing down may also be hard. One group noted, "even if you don't have a disability, you might end up with one." All this may make it hard to recruit drivers in Syria 2025. Technical solutions to these problems were discussed by participants. For example, it was suggested to design the whole cabin as a lift, allowing low entry. The cabin could also be designed so that it can facilitate the specific needs of the driver. The back of the cabin, for example, could be fitted with a toilet rather than the bed that is common in contemporary trucks. The idea behind this suggestion was that it might be hard to access public toilets for disabled drivers, making access to a toilet in the cabin more important than a bed or a kitchenette.

There is also a **need to facilitate individual adaptation of the cabin**. New technology was discussed in relation to an "iPhone model", meaning that the hardware is there when you buy it, but you may include add-ons for individual

adaptation. For example, disabled people may need to have places to put their arms, to be able to move around etc. in ways that able-bodied people don't. Another aspect was to facilitate **haptic feedback** from the road for people with poor eyesight. Others suggested thinking more about infrastructure and the fact that perhaps it is too dangerous (e.g. due to roadside bombs) to have a human driver, perhaps there is more need for driverless hubs in war-torn regions.

*Design process:* The discussions on the design process focused on how designing works today, and how to make today's truck a starting point rather than starting totally from scratch. Issues related to the costs of radical design were discussed, as well as how to make a truck in Syria that works for that setting. Key is **customer-centred design**. And the way forward is to work with local expertise, employing local experts with contextualised experience in Syria, and to include in this setting business, designers, engineers and manufacturers from the region. This is not only important from the perspective of corporate social responsibility, but also for the recruitment of people with the right competences who are familiar with regional traditions, infrastructure, contexts and communities. The main difference from how customers are often considered today by truck manufacturers is that, as it is now, Volvo sets out to ask people what they want, and afterwards writes a report for the designers who design the truck. However, as one participant said: "People usually don't know how to formulate what they need." Therefore, a more fruitful way forward is to encourage engineers to go to people with a disability background, and if possible hire engineers with a disability background themselves. In this way, the design process can become more "rooted" in the experiences of customers and in the context within which the trucks are to operate.

*Organisations:* The discussions at this table revolved around the necessity of creating inspiring and creative environments that do not contribute to a "killing of ideas" through "this-is-not-possible" syndrome. How can we avoid killing ideas in the Volvo organisation? How do you build passion into the organisation? Key is to create a mind-set that embraces openness to change, which is likely to be a very demanding task. Some of the questions discussed were: How can we avoid the organisation blocking new ideas before they get off the ground? How can the organisation continue to work from the perspective of new, unexpected kinds of users? On the other side of the coin, the problem of passionate people becoming burned out was also mentioned. It was suggested that part of the solution to creative and passionate people burning out is to create clear working structures.

## Session 2: What else needs to be brought into the discussion?

The second session aimed to bring into the discussion anything that had been missing from session 1. The following questions guided these discussions:

- What is missing in the discussion so far? What has not been talked about? What do we need to clarify?
- What challenges may occur and how can we approach them?
- What concrete steps in development can be taken for a more norm-aware design process?

One group pointed out that part of the challenge is to enter into a process of co-creation with relevant bodies in the region. How can we get municipalities involved? Will Volvo be too customer-oriented to see the whole municipality as being of importance? Issues related to power were also discussed as needing to be brought into the discussion more. For example, it was suggested that it might be difficult for Volvo staff to actually let go of their power to define how a truck “should” look and work, when working together with local experts in the region. To shift from a Volvo designer perspective to a “concept of listening” will most likely be demanding for both the organisation and individual Volvo staff members. In the longer run this calls for a deeper engagement with the “real” people actually using the trucks.

## Outcomes

One outcome of the workshops was related to the theme: “life in the cabin”. Who are the preconfigured user(s) of the cabin? What scripts do we envision around life in the cabin? Who is going to live in the cabin and how? With the Highway Pilot it is likely that the drivers are required to spend more time in their trucks than is currently the case, for example, carrying out administrative duties in the cabin. The idea behind the autonomous truck is that the truck does part of the driving, while the driver, for example, does administrative work, eats or rests. Following this scenario, one interpretation of the Highway Pilot is that it enables more tasks to be done in the cabin, tasks that previously had to be done while the truck was standing still. This scenario generated discussions and ideas about how future trucks could be envisioned as more “hybrid” in the sense of challenging boundaries between a vehicle for transport, a caravan truck, an autocamper, and a “road equivalent” to a house-boat. The fantasy phase of the Future Workshop generated discussions about new scripts for how to think about the cabin as also being a space for part of the driver’s social life with family, friends and pets to a greater extent

than today. Such scripts, which challenged social norms related to truck driving, could perhaps influence design processes. The Highway Pilot, it was suggested, makes it possible for many trucks to be connected and hooked up into truck trains using a multiple-driver function, thereby freeing time for drivers to do other things like exercising, cooking food, working on the goods, reading a book, watching a movie, or meeting other drivers, living “on the road” for some time as a “travelling family” or a “travelling group of friends” as it is sometimes done in a house-boat or motor home. From this point of view, the Highway Pilot was considered to facilitate more flexible working environments and more flexible work assignments. Volvo Group Truck Technology will investigate whether there is any interest in developing this idea further.

Along the same lines, alternative family/family life/life with trucks was a theme that was discussed at length. One participant in the Future Workshop raised the question of whether future truck “drivers” would live in their trucks in other ways compared to today, and therefore would include/bring along their families. Norms associated with life in trucks were thus challenged; primarily, the idea that cabins should be designed for a single driver. Furthermore, gender norms associated with the driver were also challenged: according to the participants in the discussions on self-driving trucks, a long-haul driver did not necessarily have to be a man – and not even one person; such a “driver” could also be composed of several people living together in the truck. Life in the future cabin/truck could, for example, be designed to host a young couple who lived their life in the truck, where taking a job as “truckers” would make it possible for them to travel and see the world.

Ideas about normality, space, place and communities are thus being challenged and negotiated through the autonomous truck as a tool to think with. In short, the Future Workshop’s focus on the Highway Pilot generated ideas that might challenge and displace dominant norms regarding work and family relations, as well as ideas about what may count as “home”, “workplace” and “driver”. Even ideas about the capacity of the truck were being disrupted; for example, it was suggested that the roof of the truck could be used for gardening and the interior designed to host even bigger constellations of families and/or friends, and perhaps facilitate more nomadic working conditions which, for example, some young people might find attractive. This points to the importance of moving beyond trucks and bodies per se to also consider social relations, society and the cultural contexts in which these trucks will be used (as was also the focus in the second workshop on the Syria case). In general, the Future Workshop generated some radical ideas

that point in the direction not only of a “concept truck” to be developed but perhaps also a “concept community”.

The Volvo staff members also pointed out that the workshop design, in which researchers/activists/Volvo staff meet, provided Volvo with new perspectives on its products and services. For example, the importance of facilitating trust in new technology such as the Highway Pilot on a sociocultural level was emphasised. According to Volvo, this is something that the company needs to emphasise more. As one Volvo staff member said, working with trucks every day gives you a deep understanding of – even intimacy with – trucks’ constitution and design, which is productive in the design process, but which may also perhaps create blind spots. When, for example, the powerful appearance and materiality of trucks was discussed as threatening to (unprotected) road users, this was a new perspective for some Volvo staff members. But this new insight generated fruitful discussions about how trucks could be re-designed, by using sound, lights and other means, to make them less threatening to unprotected road users.

Methodologically, both workshops worked well. A positive aspect of the Future Workshop was the ability to focus fully on critique, fantasy and realisation by dividing these dimensions into specific phases. Moving from the critique phase to the fantasy phase also made it possible to break the “negative” mode that some participants associated with the critique phase (which they considered to be an “energy thief”). The fantasy phase allowed participants to immediately start to generate content and work with the possibilities of new technology such as the Highway Pilot, and the fact that critique had been the focus of the previous phase made it possible to avoid blocking the collective unfolding of fantasies through negative killjoy remarks. In short, the separation made it possible for the participants to stay committed to the phase they were currently in. Yet another positive aspect was that the workshops did not presuppose consensus amongst the participants: all ideas counted. Several participants in workshop 1 were positively surprised by the fact that there was so much consensus on the “Highway Pilot” theme (both positive and negative aspects).

Another outcome of the project as a whole was related to the involvement of “unexpected stakeholders”/activists as a key element. As the “unexpected stakeholders”/activists were invited to participate in the workshop process, critically evaluating and thinking through Volvo’s concepts of the Highway Pilot and the Syria 2025 case, they were, at the same time, involved in the innovation process. The general perception amongst the activists was that they enjoyed it and felt comfortable. One of the participants underlined, for

example, that it was positive to see how “gender and intersectionality” could meet with and have an impact on the Volvo world.

*Inviting “unexpected stakeholders” into the innovation process is a novel concept that was tried out in this project and filled with content, providing a platform for further joint reflection and development in future projects.*

A lesson from the first workshop (the Future Workshop on the Highway Pilot) was that Volvo wanted the “unexpected stakeholders” and the researchers from Tema Genus to bring even more critical perspectives into the discussions, a critique which the project team considered an important lesson that was taken into account during the preparations for the second workshop. Against this background, the second workshop, based on the World Café format, was held in English. This made it possible to invite more students from Tema Genus’ international master’s programme, many of whom have activist backgrounds from different countries and social movements. By doing so, the stage was set for the inclusion of even more critical perspectives on the Syria case than had been involved in the Highway Pilot case.

Like the Future Workshop format, The World Café format was designed to generate both critical perspectives and new ideas, and according to the participants it did, indeed, produce “a lot of creative ideas”. But, at the same time, the activists also asked for more information about Volvo and how Volvo works. As some of the participants noted, more in-depth knowledge about Volvo’s innovation processes would make it easier to evaluate the plausibility of the ideas generated and to be more concrete. In future collaborations, more time and more in-depth knowledge about Volvo Group Truck Technology will no doubt be necessary in order to take this methodology further.

A related aspect of this was that the activists were keen to find out whether or not their input would actually make a difference in the process of developing a new truck. They wanted to be sure that the time they invested in the project would make an impact. The activists raised this discussion in the evaluation of the workshops. From Volvo’s perspective, it was emphasised that the development of a new concept truck would involve a lot of financial investment and time, and the two workshops in this project had certainly played a part in this process. There was a general agreement that with this pilot project we had together created common ground for continuing the work on the concept truck: “a truck for all”.

## Discussion

Judging from the workshops, it seems clear that long-haul trucks can act as an important “object-to-think-with” in the work towards increased norm awareness and norm critique. From the perspective of creating “objects-to-think-with”, long-haul trucks can be considered as norm-critical machines, “thinking technologies” (Haraway 2004, 321f) for creative norm-critical innovation. Like other designed artefacts, trucks are objects that not only express and reproduce, but may also challenge, gender stereotypes (Pettersson McIntyre 2010, Balkmar 2012). Therefore, trucks need to be considered as being integrated into the ways in which gender and gendered identities are “done”. In a project on gender, design and consumption, Magdalena Pettersson McIntyre and others studied how consumption may “drive” gender equality. Part of this project was to study one of Volvo’s concept cars, the Your Concept Car (YCC), designed by women for women drivers. This particular car, just like the concept truck discussed as part of this pilot project, may be understood as both confirming and provoking definitions of technology and gender – and their co-constructions (cf. Balkmar 2012). The fact that the YCC was designed by women and for women exposed the apparently stable and taken-for-granted nature of car design, namely, that cars are made by men for men (Pettersson McIntyre 2010: 16, 27). Together, these previous studies provide us with important insights for understanding the importance of considering technology’s complex role in (re-)shaping gender, and vice versa. We have expanded these perspectives to include critiques of dominant ideas about disabilities, family norms and work-life balances that may also circumvent the contemporary “model driver”.

In this project we have not considered the truck to be something that is stable and fixed in meaning. Instead, throughout the workshops and the pilot project as a whole we have taken the opportunity to problematise the truck itself through intersectional gender analysis. As we noted at the beginning, the domain of trucks is systematically associated with masculinity, among other intersections such as class, age and able-bodiedness. In this project, the discussions have not only focused on gender, but also encompassed normativities related to bodies, disabilities and war-related traumas: a reality in a post-war context such as the imagined Syria 2025 case. Through the two workshops we have intervened in the world of trucking, using a future-oriented lens, “thinking with” the truck to imagine what a truck “for all” might look like and be able to facilitate. Through the project and the workshops we have taken the opportunity to challenge and question what a truck is by

expanding the *possibilities* of trucks (cf. Balkmar 2012).

Inviting unexpected stakeholders into the project has been a key element in this intervention. Activists have been critical friends in the innovation process and brought perspectives on the Highway Pilot and the Syria case that we believe would not have been heard had they not been present. Trained in norm-critical thinking, including the whole range of intersecting power orders (class, gender, age, dis/ability, sexuality, ethnicity, environment), they energised the discussions on a future concept truck.

Having said this, it is also important to note that activists’ participation and input should not just be taken for granted. Even though the workshop format aimed to create flat and democratic discussions about themes and questions that engage all participants, and despite encouragement to let all voices be heard, the activists also raised concerns about how much impact their work will actually have in the end. The extent to which Volvo actually wishes to include activists’ approaches remains to be seen. But, judging from this project, Volvo Group Truck Technology seems to really see the potential of including the ideas and inputs of unexpected stakeholders in the future. In the longer run, for Volvo to succeed in challenging the status quo within their organisation and by doing so reinvigorating engineering culture, disruptive norm-critical innovation seems to be a fruitful way forward.

## Future collaborations

Having outlined and discussed the first step of the project above, it is now time to move on to discuss the overall aim, which is to develop a joint application on norm-critical innovation for VINNOVA.

One way of moving forward could be to develop the workshops at Volvo by introducing more new methodologies within the workshop format. This would allow us to build on and develop the methodologies and issues articulated in these two workshops through applying for a grant to carry out a follow-up pilot study. Part of such a project could be to involve the MA students (unexpected stakeholders/activists) more directly through their MA assignments. Integrating the students from Tema Genus’ master’s programme in Gender Studies – Intersectionality and Change even more would also facilitate a closer collaboration between Volvo and Tema Genus.

However, after discussion with Volvo, this first step was considered too modest. On the initiative of Volvo, the goal was instead set towards developing a new concept truck based on the ideas generated in the workshops. Since the time-line for developing a new concept truck is very long and involves a lot

of processes and decision points, the need to scale up our ambitions seemed urgent. Rather than applying for yet another pilot project, the goal was set to put together a consortium comprising the gender researchers' team from Tema Genus, Volvo Group Truck Technology, and other relevant stakeholders, including unexpected ones. For this to happen, work will be devoted to getting relevant people at Volvo to commit to the idea of developing a new concept truck based on the Syria case. When this goal is met, the next step will be to apply for project funding from VINNOVA.

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