Volvo Cars – From Safety as a Product to Safety as a Culture: A Journey Of Volvos Innovation History

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Summary
This paper aims to portray the design journey and innovative strategy of Volvo from the 1950's up until present time, with a clear focus on the safety aspect of Volvos design and innovation. The study aims to show how safety has evolved from purely mechanical standpoint to a systemic design philosophy. This paper uses academic and Corporate Resources, analyzes key innovation stages starting at the invention of the three-point seatbelt to the digital and ethical design systems of today. It also incorporates Scandinavian values, Nordic design thinking and organizational ethics that together have co-shaped Volvos design and innovation identity.

Keywords: *Automotive Safety, Volvo, Safety Innovation, Human-centered Design*

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1. Background and motivation

The morning of 14 April 1927, the first Volvo drove out from the production facility in Gothenburg, Sweden. Since then**,** Volvo has consistently built its identity around a central aspect. Safety as a care for people. As Volvos founders of Volvo, Gustaf Larson and Assar Gabrielsson said**,** "Cars are driven by people. The fundamental principle behind everything we do is – and must always be – safety".

This paper will examine Volvos innovation and design journey from the 1950s until present time. The focus will be on the evolution of safety as a design and ethical value. It will trace how the Company have moved from a Product based innovation towards designing systems that are socially and ethically inclusive as well as sustainable.

The choice of Volvo as a case study is highly motivated by its focus on safety for all. It also combines safety as a part of its Product design and aesthetic. Furthermore, it aims to not just be a car manufacturer but aiding in reducing Death by traffic related injuries and accidents worldwide, making the World a safer Place for all. As the Design Council (2014) notes, Scandinavian firms tend to integrate ethics and function into design practice, balancing aesthetics and utility. Volvo has truly integrated all these aspects and the "Designed Around You" initiative during the 2010s is a great example of this hypothesis.

2. Theory

This theoretical section ill *summarizes* different perspectives used to interpret Volvos innovation and design journey. It aims to show how design thinking, ethical innovation and systemic Learning have been a red thread of the *Company's* evolution. Volvos approach to innovation *reflects* a systemic innovation process where design, safety research and cultural branding form a co-evolving ecosystem. This aligns with the definition of innovation as an interconnected network of for example, different actors, technologies and institutions (Shanthi et al., 2010).

2.1 Innovation as a journey

Van de Ven et al. (2008) describes innovation as a non-linear journey. It is often characterized by a collaboration of different actors, contains uncertainty and evolves with feedback and iteration. It is not static but rather a process constantly changing and evolving.

2.2 Design thinking and reframing

Dorst (2011) argues that framing and reframing are core mechanisms in design thinking. Designers create new meanings by combining knowledge with aspirational goals. This process can be seen in how Volvo took safety from being a more technically focused issue to a more human-centered design. Carlgren, Elmquist and Rauth (2016) add that large industrial firms often struggle to embed design thinking because it requires both structural and cultural change. Here, Volvo shines as an example of when values in a very natural and consistent way align with the goals, both culturally and structurally. The safety concept at Volvo has been consistent since early years of the company. And some of the very big innovative steps was for example, the three-points seat belt in the model PV544 in 1959 and the rear-facing car seat, introduced in model PV444 in 1964.

Dorst's (2011) emphasis on abduction, moving from observation to new conceptual frames, shows how Volvo takes ideas from the drawing table to implement it into its Products. It also dares to break *boundaries* and take on new perspectives and innovative ideas. Carlgren et al. (2016) further stress that such interpretive flexibility is essential in large firms, where traditional KPIs often suppress creative reasoning. So, here we clearly see a concept emerging on all fronts; safety as a norm, not a bi-Product.

2.3 Ethics and innovation

Schumacher and Wasieleski (2013) propose an integrated causal model of ethical innovation, where moral awareness, organizational learning, and systemic governance reinforce each other. In other Words, combining all these factors are key to create ethical innovation. Ethic and innovation are, by other Words not opposing forces but rather emphasize each other, creating a symbiotic state when it comes to sustainable and inclusive design. Volvos concept of the Three Point *seat belt* in 1959, which was made patent free and open for all manufactures, shows how the Company has *institutionalized* this moral aspect, shaping the very Foundation for ethical innovation.

Also, Volvo's long-standing "no death vision" (Vision Zero alignment) illustrates Schumacher and Wasieleski's (2013) notion of institutionalizing ethical innovation. Not only contributing with accident *research* via the E.V.A initiative and thereafter constructional changes that can produce safer cars, *but Volvo also* has been building knowledge from real-Life road accidents since the 1970s. This shows that in its very core, Volvo has safety as a factor of importance. Safety is not just something that comes along in the process, *it's* in the very Foundation of it.

2.4 Design & marketization

Palmås (2023) argues about the emergence of car safety as a marketization of ethics. His study of Volvo's seatbelt story shows that safety was not merely *invented but* socially constructed as a core part of the Company and its pitch. It involves both *engineers*, policymakers and public institutions, making Volvos concept of safety transcend pure marketing up into the very institutions that guide how laws and safety are developed *system wide*.

Palmås' (2023) interpretation complements Van de Ven et al.'s (2008) processual view of innovation. Both perspectives reveal innovation as a socially negotiated practice. In Volvos case, safety is Paramount not only for reaching the Vision Zero and keeping the Culture of safety alive both inside and outside the Company, but also to create innovative Products that sell and can claim market shares in a very *competitive* segment. For Volvo, innovation is not only a technological act with its clear advantages in producing viable Products, but also a Civic one, targeted to the public in a more ethical and sustainable sense.

2.5 Industry design practice and systemic value

The Design Council (2014) highlights how successful companies in the automotive sector integrate design into business strategy, translating user insights into competitive advantage. Here, as previously mentioned, Volvo has a clear advantage when it comes to translating both user insights but also overall user data, in the form of safety research. Volvo takes on a systemic approach in its industry design, combining both Visual design, engineering, safety innovations and implementations and its brand identity. Volvo's own Sustainability Report 2023 reinforces this systemic view, showing safety as both a business commitment and a societal responsibility.

These perspectives and concepts form an inclusive and wide framework for understanding Volvos design and innovation journey.

3. Information sources

This paper and its analysis are based on six different confirmed and accessible sources. They are as follows.

Academic Articles

- The core of "design thinking" and its application (Dorst, K. 2011).
  The challenges of using design thinking in industry: Experiences from five large firms (Carlgren, L., Elmquist, M. & Rauth, I. 2016).
- Design in Marketization: The Invention of Car Safety in Automobile Markets (Palmås, K. 2023).
- Institutionalizing ethical innovation in organizations: An integrated causal model of moral innovation decision processes (Schumacher, E.G. & Wasieleski, D.M. 2013).

Industry Report

- Leading Business by Design: Automotive Sector (Design Council 2014).

Corporate Documentation

- Annual and Sustainability Report 2023 (Volvo Cars 2023).
- Various information (Volvo Cars Website 2025).

All academic sources are peer-reviewed and collected by using the Scopus database. Corporate and Industry sources were accessed via Volvo Cars' official website and its database as well as via the UK Design Council website.

AI and tools used:
AI (ChatGPT-5) was used to structure the document in accordance with the template. Is was also used to synthesize the theoretical framework and aid in my development of a consistent academic tone. All conceptual and analytical content aided with AI has been manually verified and reworked into the original material.

4. Findings

4.1 Key stages in the innovation and design journey

In accordance with Van de Ven et al. (2008), Volvo's evolution of innovation and design can be understood as a series of interconnected phases where each part marks new innovative frontiers and steps of interconnected design in both ethical, sustainable, moral and innovative technical concepts.

Stage 1 (1950s–1970s): Establishing Volvo's Ethical Approach to Safety
Volvos safety innovation journey took its first major step in the release of the three-point seatbelt introduced by engineer Nils Bohlin in 1959. Furthermore, Volvo chose to give all manufacturers the possibility to make use of the seat belt if they needed and wanted to. The patent was registered by Bohlin, but the invention was open for all. This phase and innovation truly demonstrate the role of Scandinavian institutions in shaping industrial ethics, as previously mentioned. Other innovations that came during this time were as previously mentioned the integrated reversed child-seat as well as the later invention of the belt cushion during the late 70's.

As Palmås (2023) notes, the early safety movement in Sweden blurred boundaries between state regulation, research, and corporate innovation. Volvos view of a innovation for everyone, that instead of profits and marketization this could usher in a new era of car safety, not depending on a specific car manufacturer.

Stage 2 (1980s–1990s): From Technical Safety to Human-Centered Design
During the 80's and 90's Volvo began to reframe safety to a more user-centered design process. Dorst's (2011) idea of framing explains this transition: design became a way to generate meaning rather than just solving problems. Even though this concept was a part of the previous philosophy to some extent, it now took a more prominent part of the Culture and systemic context of Volvos concept. During this era Volvo implemented, as an example of design integrated with innovation, Volvo built child safety into the car seat with the world's first integrated booster cushion. Later years of the era saw more technical innovations in the form of impact protection systems, side impact airbags, whiplash injury protection and inflatable curtains. Here, a large portion of the innovative strategy was targeted at creating minimalistic Environments containing a wide Array of safety Equipment and Technologies, combining design thinking with technical innovation.

This era also had Volvo beginning to absorb more global influences. Ergonomics, once a more niche field, became a more central aspect to design engineering. Volvo also launched internal design labs where engineers collaborated with other faculties. This can be seen as a practical realization of Carlgren et al.'s (2016) calls for cross-disciplinary teams.

Stage 3 (2000s–2010s): From Human-Centered Design to Systemic Safety Ecosystems
The era in the new millennium was a time for more systemic safety ecosystems. As seen in the Design Council (2014) study, leading automakers increasingly treated design as a strategic function rather than a downstream service. Albeit being that Volvo already had implemented a strong safety innovation Culture, this era saw notable advancements in the field of safety with a focus on strategic functionalities. Innovations such as the rollover protection system and blind Spot Information System (BLIS) was part of the early 2000's and following this a focus on pedestrian safety took Place. With the first Volvo XC60 model, autonomous emergency braking became standard. Using laser detection, this system helped reduce rear-end collisions and avoid collisions at low speeds. This was followed by pedestrian detection with autobrakes. Using radar and cameras, this system detects pedestrians stepping out into the road, warning the driver and automatically brake if necessary.

Later years in the millennial era saw other more technically focused inventions such as skid protection. As pioneers in rollover crash testing, Volvos focus was on keeping passengers safe in real-world collisions. Some innovations were the tightening of seat belts and introducing energy-absorbing seats to mitigate spinal injuries. Combining cloud-based services for prevention, the Slippery Road Alert and Hazard Light Alert were invented and implemented. By sharing real-time data between vehicles, these systems warn other drivers of icy roads or nearby hazards. The latest years also saw safety systems for Oncoming Mitigation by Braking, another step in creating systems that directly aids human interaction and reaction. This era demonstrates the importance of collaborative efforts within several contexts creating a more systematic approach to innovation and design from a human-centered perspective as well as a technical one.

Stage 4 (2020s–present): Data-driven ethics and systemic accountability
Volvo Cars (2023) describes the company's current stage as defined by transparency and data ethics and safety is no longer only confined to mechanical and digital systems. Volvo includes a psychological aspect for well-being, inclusivity and sustainability. This corresponds with Palmås' (2023) notion of marketized design where companies such as Volvo can internalize public values as part of its innovation strategy. Volvo takes on an approach of AI ethics, a more streamlined open data policies as well as a strong emphasis on climate accountability.

In the 2023 sustainability report, Volvo describes a future were protecting human Life as well as planetary Health co-resides. Safety is not only confined to human Life, but organic Life across the board focusing on sustainable practices, production and a shift from fossil fuels to Electric cars in a much broader sense than before.

In addition to these shifts Volvo still produces technical innovations that aim to integrate human interaction and design aspects to safety futures for both passengers, drivers and pedestrians. Volvos onboard detection system released in 2023 for distractions, fatigue and impaired ability can together with data from the car's external sensors determine when it is time to intervene.

To this Volvo also implemented an occupant sensing system that can minimize the risk of forgetting Children or animals in the car. Last year of 2024 the Danish Accident Ahead Alert system was implemented to better prepare drivers for accidents ahead, creating yet Another way of preventing accidents on the road.

Lastly, since 2019 Volvo continuously shares its data based on accident reports and testing for other manufacturers to partake in to be able to create an ever-safer traffic Environment for all. This together with all of Volvos safety innovations since the start of the innovate safety journey sets a solid Foundation for all to partake in, creating a safer World.

4.2 Challenges and opportunities in each key stage

Stage	Challenges	Opportunities
1	Limited understanding of user and driving behavior, resistance from the public when first implementing the three-point seat belt	Establishing brand ethical safety legitimacy through making seat belt open patent and displaying civic leadership in pursuing a safer driver environment
2	Challenge of implementing human-centered innovation, finding the right balance between innovation, design, demand and knowledge	Fostering Scandinavian usability and design, cementing the status of a ethical, innovative and competent company, diverging from competitors in the safety sector
3	Venturing into the digital era with its challenges in implementation contra aspirations, cost of pursuing innovative strategies, concepts & products with regards to competition	Combining the digital era and its opportunities with aspirations of innovation and strategy for a broad company safety culture as well as marketization of safety ethics and improvements of the company's products
4	The concept of staying relevant, on top and in the frontier of safety innovations among competitors, finding the right area of marketing and product placement, adapting to the new era of electric cars and the transition from fossil fueled vehicles to a sustainable renewable future	Defining and consolidating the company as an ethical design leader across the safety spectrum in innovation and design, claiming market shares based on being on the frontline of combating non-sustainable practices, daring to build on both history and the possible future, creating a symbiose of conservative and progressive concepts

The red thread of Volvos innovation journey has been the challenge of transforming safety from a purely functional aspect to a cultural one, sewing together the company's Products with everyday needs for safety functionality. Opportunities emerged by being able to align technology with the Culture of safety both inside and outside the Company itself, reflecting both the societal needs as well as the demands therefore embodying what Dorst (2011) calls meaning creation through design framing.

5. Discussion – Future challenges and opportunities for Volvo Cars

As Volvo now enters a new era where for example, autonomous driving and AI governance plays a greater role the main challenges are both ethical and systemic rather than just a technological one. Schumacher and Wasieleski's (2013) framework suggests that maintaining moral innovation requires continuous learning and organizational duality. Here, Volvos strong spirit of research together with development may alleviate the challenge of partaking in his new autonomous World. However, this is not to say it will be an easy challenge to overcome. To combine autonomous systems with, for example, pedestrian safety or haphazard occurrences is something that will take both expertise and time to work out.

Another dimension of a future challenge is the concept of transparency together with competitive advantage. Palmås (2023) positions Volvo's early safety innovations as a form of "market reframing," where design absorbs external ethical demands into internal value systems. To be able to do this, Volvo must work on several fronts at the same time, always taking into consideration what to explore, convey, partake in and share. Even though Volvo has a history of sharing and caring, still being able to maintain its competitive edge, it holds a risk of creating opportunities for competitors to partake or even usurp ideas and coming innovational strategies and Products if not being threaded carefully.

The Design Council (2014) emphasizes that design-led firms must sustain a dialogue between creative and strategic functions. Volvo does this to a certain extent, and the 2023 sustainability report outlines goals for circularity, digital trust as well as inclusivity. It shows that Volvo aims to extend even more beyond the user of the Product to encompass society and the environment. How Volvo are about to About this is a great challenge. Where does the line between transparency and innovation based on user data intersect with the goal of keeping the frontline in development of market share capturing Technologies and innovations, ahead of the competition?

In all, Volvo can further evolve its image as a "safe car maker" into a more "trust design Company" where the brand's social contract stems from its safety and ethical Culture even more so than today.

This reflects Dorst's (2011) argument that design reframes meaning systems rather than merely improving artefacts. But in doing this, they will have to thread carefully, balancing innovation and profit with keeping the flame of its safety Culture alive.

6. Concluding remarks

Volvo Cars journey shows how innovation and design can co-evolve as a cultural and ethical process, riding on the advancements in technical innovation and development. What began as an engineer's quest for a safer driver Environment has become Volvos organizational philosophy based on the idea, that people are to be put first.

From an innovative perspective, Volvo does exemplify how safety innovation and design can become a long-term competitive edge, claiming both trust and market shares. From a design perspective it shows how inclusiveness, transparency and continuous studies and data gathering can create sustainable value and incorporate this into the very core of the aesthetic and functionality of the Products themselves.

If Volvo can manage the coming trials of the new era and build upon its solid Foundation of its Culture in safety and stay ahead of its competitors are the great leader in safety innovation, great things are surely to come for both society as well as the driver, the passenger and the pedestrian.

In the Words of three-time Formula 1 champion Sir Jackie Stewart; *"It takes leadership to improve safety"*.

6.1 Main learnings:

- Safety grew from invention to identity; it's part of Volvo's DNA.
- Ethics and innovation strengthened each other, not the opposite.
- Design thinking helped Volvo keep the safety perspective human, not just technical.
- Sharing knowledge has built both trust and global influence.
- The next challenge: continuing the safety culture with creating digital trust.

This case also highlights the growing role of involving reflective design practice. Dorst's (2011) framework suggests that maintaining innovative capacity depends on organizations' ability to continuously reframe problems as contexts evolve. For Volvo, this means that they must continuously explore both current and potential challenges and ways to build on or create innovative strategies for these.

Finally, drawing on Palmås (2023) and Schumacher & Wasieleski (2013), the study underlines that future automotive innovation must address not only safety and efficiency but integrity and autonomy. With the rise of AI and integrated autonomous systems there are challenges regarding the legal aspects of information Collection and management as well as user experience within the new digital frameworks. Volvos ethos, as previously mentioned, "putting people first" can therefore act as a Compass for the ethical challenges of AI implemented technologies.

6. References

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