The self-driving vehicle in video advertisements

A critical discourse analysis on the representation of its human-technology relations

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Abstract

The concept of the self-driving vehicle has been elusively speaking to our imaginations for the past decades through advertisements and popular culture. After always being seemingly at the horizon of a utopian near future, the technology suddenly became very real with Google's blogpost on the morning of October 9 2010. Since then, just about every automotive designer such as Mercedes, Hyundai, and Tesla Motors have jumped on the technological bandwagon of developing its own self-driving vehicles. For this research on the representation of human-technological relations in self-driving vehicle advertisements, I have established a theoretical framework consisting of the works of the philosophers Martin Heidegger, Don Ihde, and Peter-Paul Verbeek under the ontological notion of postphenomenology, which have allowed me to interpret how the relations between humans and self-driving vehicles are constructed. In order to analyze how these relations are represented and conveyed to the viewer of the advertisements, through linguistics and intertextual relations, I have drawn upon parts of Norman Fairclough's CDA model. I have focused on the framework's dimensions of textual analysis by analyzing the corpus' use of interactional control, interdiscursivity, cohesion, wording, and metaphors.

Self-driving or driver-assisted technologies are represented as having the capability of being of great value in everyday life and traffic in terms of safety and mobility, with the added bonus of creating time for the driver to spend on other things. Currently, in a somewhat symbiotic relationship, the acting capability is represented as being capable of switching back and forth between human and technology as, during the drive, the human driver can prompt technology to take command, prompt technology to return to manual driving, or technology can prompt the human driver to take over the wheel during technical difficulties or when nearing the end of the destination. In a more distant future, the self-driving vehicle is represented as capable of delegating and interpreting all human actions in traffic, thus being able to replace the human driver entirely (and taking human driver error out of the equation). Generally speaking, the self-driving vehicle is represented as a tool for transportation to be used by human drivers for their convenience whenever they see fit during a journey. This usefulness is lost when the human driver is no longer inside the vehicle. However, unlike a traditional car, the self-driving vehicle will be able to be prompted to find itself a parking space and be hailed to a person's current location, saving additional time. Automotive designers frame autonomous driving technologies by projecting 'utopian' connotations of increased safety, mobility, and freedom onto them in their advertisements. With their financial stake in mind, their biased advertisements – which only show optimal conditions for showcasing the technologies.

Keywords

Automation • delegation • self-driving vehicles • postphenomenology • advertisement • Philosophy of technology • representation • intentionality

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1. Introduction

At the turn of the century, the idea of a machine with a horselike quality – the ability to be self-propelling – seemed preposterous. What seems absurd to us today is the idea of the automobile's dependence on the antiquated horse for acceptance and even survival.
– Chiu (2008, p.1)

As the above mentioned quote from the book *The Evolution From Horse to Automobile: A Comparative International Study* exemplifies, our perception of technology is influenced by our relation with it. What seems impossible now might be completely normal in a few decades. The acceptance of the automobile over the traditional horse as a means of transportation in the 1900s has been a difficult process (Chiu, 2008, p.2). Back then it was hard to fathom a machine with a horselike quality to replace the current means of transportation. One major difference with the implementation of self-driving vehicles is the fact that self-driving cars have been speculated upon for decades as the image *Driverless Car of the Future* (1957) on the front page of this paper is a great example of. The article below the image states:

"ELECTRICITY MAY BE THE DRIVER. One day your car may speed along an electric super-highway, its speed and steering automatically controlled by electronic devices embedded in the road. Highways will be made safe — by electricity! No traffic jam.. no collisions... no driver fatigue."

In contrast to driving manually, a self-driving vehicle will not cause traffic jams, avoid all accidents, and never gets tired. The family inside the vehicle can be clearly seen delegating the task of driving to the vehicle, while they face each other and occupy themselves with playing a board game – not having to pay attention to other traffic at all. Around the same time (1959) Arthur Radebaugh's representation of the self-driving car, in the February 22nd edition of *Closer than we Think,* paints a similar picture of a family facing each other and enjoying themselves with a game of cards, while the vehicle drives itself to their destination:
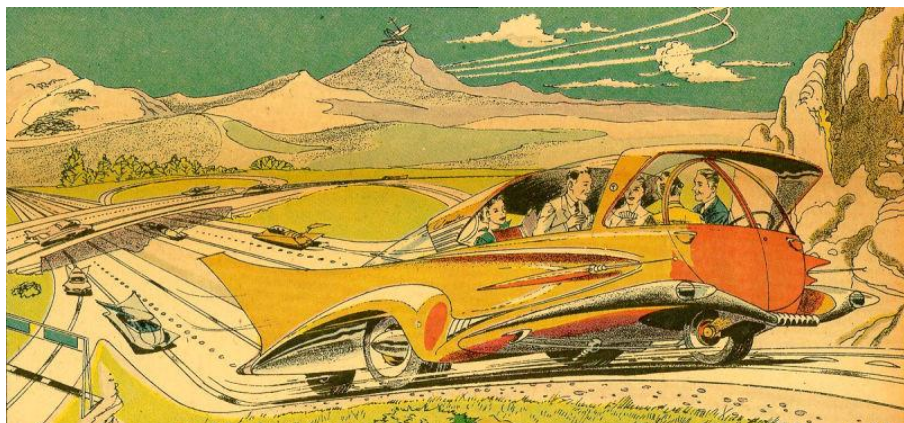

Image 1.1: Radebaugh
(1959). Closer Than We Think

1.1 Autonomous driving in popular culture

The concept of a self-driving vehicle is probably not new to you. When you think of one, you will think back to that one film or television series portraying a self-driving vehicle and its capabilities. The examples mentioned in this subchapter serve as a point of reference for people when thinking about self-driving vehicles, making the technological advancements of today seem somewhat recognizable. Chapter 4 of this paper will show that references to these examples in popular culture are not uncommon in self-driving car advertisements.

Self-driving technologies have not been strangers to popular culture. In the episode *Magic Highway USA* of the Disneyland TV series (May 14, 1958a), a family is shown in the same fashion as the two previous examples; playing a board game together while the self-driving vehicle 'flies' to its destination. However, in the same episode, the man of the family is shown making a conference call from the vehicle, portraying the capability to do work while traveling to work (ibid, 1958b). Another self-driving feature is shown in the 1966's television show *Batman* (Dozier et al., 1966). Here, the *Batmobile* is seen being summoned to the protagonist's current location, whereto the car drives itself. 16 years later, in the TV series *Knight Rider* (Larson, 1982)*,* we see a more advanced representation of a self-driving vehicle. Listening to the name "KITT"*,* this self-driving vehicle is portrayed as a sentient car and is given a personality. It is capable of everything a super-car is capable of (such as incredible speeds for its time, turbo boost, et cetera.) and is able to communicate with other people by speech. In Paul Verhoeven's film *Total Recall* (1990) another self-driving vehicle is briefly shown with the ability to communicate with other people. The *Johnny Cab* is a self-driving taxi that has a talking chauffeur-like robot close to the steering mechanism and passenger seats in the back. Although it does not take long for the protagonist to take 'manual control' of the vehicle, the film hints at how future taxis might take people to their destination. A final example of self-driving cars in popular culture is the Audi RSQ advertisement featured in the film *I, Robot* (Proyas, 2004). The protagonist's streamlined ride was an actual Audi concept car, produced for the film's product placement. As well as driving itself at hundreds of miles per hour, the RSQ featured balls for wheels.

1.2 It's finally here

Self-driving vehicles have been speculated upon as a *technological imperative*: A doctrine that states that because a particular technology means that we *can* do something (it is technically possible) then this action either *ought* to (as a moral imperative), *must* (as an operational requirement) or inevitably *will* (in time) be taken (De Mul, 2002, p.33). However, in an influential 2004 book, *The New vision of Labor: How Computers Are Creating the Next Job Market,* economists Frank Levy and Richard Murnane argued that there were practical limits to the ability of strings of code to replicate

human talents, particularly talents that involve sensory perception, pattern recognition, and conceptual knowledge (Levy & Murnane, 2004, p.20). They stated that executing a left turn across oncoming traffic involves so many factors that it is hard to imagine the set of rules (code) that can replicate a driver's behavior. Paraphrasing Levy and Murnane, it seemed that the self-driving car would remain in the realm of fiction alike how a machine that could propel itself seemed preposterous in the 1900's. Ironically only six years later, on the morning of October 9 2010, one of Google's in-house inventors made the first official announcement of the companies' development of "cars that can drive themselves" (Thrun, 2010). The benefits of this technology are described as safer, more environmentally friendly and more time efficient. As stated in the blogpost:

> According to the World Health Organization, more than 1.2 million lives are lost every year in road traffic accidents. We believe our technology has the potential to cut that number, perhaps by as much as half. We're also confident that self-driving cars will transform car sharing, significantly reducing car usage, as well as help create the new "highway trains of tomorrow." These highway trains should cut energy consumption while also increasing the number of people that can be transported on our major roads. In terms of time efficiency, the U.S. Department of Transportation estimates that people spend on average 52 minutes each working day commuting. Imagine being able to spend that time more productively.
> – Thrun (2010)

The blogpost shows overlaps with the speculated benefits of the self-driving vehicle in the *Driverless Car of the Future* (1957) advertisement, such as the focus on safety and the "highway trains of tomorrow". Today, Google's fully autonomous test cars have logged more than a million miles on public and private California roads, driving passive passengers safely down city streets and highways. The latest iteration of Google's car doesn't even have a steering wheel.

As far as the motivation for this technology goes, public safety seems to be a good incentive to get human drivers out from behind the wheel. According to NHTSA, a number of major crash studies have found human error to be the cause of more than 90 percent of those crashes (Weir, 2015). While hardly being a cheerleader for technological progress, the NHTSA says the advent of vehicles that drive themselves will also provide completely new possibilities for increasing environmental benefits, expanding mobility, and creating new economic opportunities for jobs and investment (Davies, 2015). Seemingly, in the perfect world, automation would take driver error out of the equation by replacing the presumed traditional humanistic liberal subject; the human. As seen in the advertisements of the 1950's, when humans are liberated from the need to keep their hands on the wheel and eyes on the road, drivers will become passengers that have more time for work, leisure, and staying in touch with loved ones. Understanding the aforementioned interplay between

a self-driving vehicle and its 'driver' or 'passenger', also called the *human-technology relation*, is a subject of significant importance for ethicists interested in questions concerning technology's influence on the human condition and vice versa, such as how to program a self-driving vehicle to reduce damage and minimize harm done to others (Lin, 2004). Self-driving vehicles have a cultural impact. The representations of these human-technology relations towards the general public play an important role in the coming about of this cultural impact, as it shapes our understanding of the capabilities of self-driving technologies and how we are supposed to interact with them. This paper will focus on the representation of these relations within advertisements, since advertisements are something the average consumer is subjected to everyday.

Just about every automotive designer (e.g. Mercedes, Hyundai, Tesla Motors) has jumped on this technological bandwagon and has started developing and advertising its own self-driving model, catering Silicon Valley with new R&D labs to work on the challenge (Vanderbilt, 2012). These automotive designers introduce autonomous technology to the public in phases, rolling out new features in otherwise conventional vehicles. According to Alex Davies in his *Wired* article (2015), in the next three to five years, humans can expect to remain in control when driving in urban areas due to the present amount of obstacles and variables (e.g. pedestrians, cyclists, cabbies, et cetera). Around 2040, we can expect the cars to be fully autonomous (Davies, 2015). After being depicted in advertisements, TV shows, and films for so many years, the car of the future is finally here in the sense that the act of driving is now being delegated to a computer. This implies a change in the way humans and technology constitute each other, and is a key concept on which this paper will focus.

1.3 Motivation

In his book *The Glass Cage: How our computers are changing us* (2015), author Nicholas Carr notes disturbances in the relationship between a human and technological actor whenever automation comes into play. They arise as the role of active 'driver' switches to passive 'passenger'. These disturbances include *automation complacency* and *automation bias* (Carr,2015, p.67). Automation complacency is described by Carr as relying too much on technology, becoming so confident that the machine will work flawlessly and handle any challenge that may arise, resulting in the dulling of one's skills and unnecessary accidents whenever a person is forced to take over the (if any) steering wheel when inside of a self-driving vehicle. Automation bias is closely related to automation complacency and it creeps up when undue weight is given to the information computing through a monitor (p.69). For example: blindly following a GPS system over street signs because you think something along the lines of "the GPS system knows best". Do automotive designers present these proclaimed 'negative side-effects' to the public in their advertisements? Again, researching the representation of self-driving technologies in advertisements would result in valuable insights on the way our perception of

self-driving technologies (automation) is shaped.

This notion of disturbances in the human-technology relation embodies the motive for the coming about of this paper. Carr describes these examples of 'negative side-effects' of automated vehicles on human behavior/experience, but does not evaluate them in-depth as to provide a possible explanation of how these effects come to be or why they would occur in the first place. For example, he does not explain in detail how humans and technologies (mutually) constitute each other, nor does he make apparent which kinds of human-technological relations exist. The ontological notion of *postphenomenology*, thoroughly described in chapter 2 of this paper, proves to be fundamental in recognizing and interpreting the human-technology relations presented in self-driving vehicle video advertisements. As Peter-Paul Verbeek states: designers engage in "ethics with other means"; that is, their products codetermine the outcome of moral considerations, which in turn determine human action (2006, p.2). In other words; the self-driving car mediates the experience of the driver. This research wants to explore self-driving vehicles in advertisements in order to expose how the human-technology relation involving self-driving vehicles is represented. The main question that this paper will try to answer is: *"How is the relation between a self-driving vehicle and its occupants represented by automotive designers in their autonomous driving advertisements?"*

1.4 Relevance

This paper deals with self-driving vehicles, a phenomenon which will continue to grow in demand, purchase and use in the near future, as well as advertisements, which is something the average consumer is subjected to everyday –making this research socially relevant. Advertisements speak to the imagination and construct the discourse around the advertised product. How is this done, and what exactly is shown to the consumer? While new driving technologies are presented as "the next best thing" or "logical next step", there are culture critical writers such as Nicholas Carr who notes that automation has its fair share of downsides and advocates us to be wary of blindly using such technologies. Furthermore, this research contributes to the current field of research on autonomous driving technologies and, more specifically, to the representation of human-technology relations in self-driving vehicle advertisements.

Academically, this paper positions itself in the ontological notion of postphenomenology, which states that the human and technology mutually constitute each other (see chapter 2). While Carr's writings lack a detailed description of human-technological relations, the analyses of Martin Heidegger (2000), Don ihde (1979, 1990), and Peter-Paul Verbeek (2005, 2006, 2008) allow me to interpret and thoroughly describe the human-technology relations presented in self-driving video advertisements. My research acknowledges Carr's notion of possible downsides of automation, but

argues not to look at self-driving technologies as "present-at-hand". Instead, by using Don Ihde's descriptions of human-technological relations, I argue that different gradations of "ready-to-hand" relations between humans and technology exist, and that shifting from manually-driven to autonomously-driven vehicles imply a shift within this "ready-to-hand" relation.

1.5 Paper outline

In order to answer the main question of this paper, I will first establish the theoretical framework which will serve as a platform for analyzing the corpus of self-driving vehicle advertisements. In order to gain an understanding of how humans and technology mutually constitute each other, and to gain the vocabulary and understanding needed for recognizing and interpreting the human-technological relations represented in self-driving vehicle advertisements, I will draw upon the ontological notion of postphenomenology. The works of philosophers Martin Heidegger, Don Ihde, and Peter-Paul Verbeek allow me to place human-technological relations on their created framework, and denote whether a fundamental shift takes place when humans shift from manual- to autonomous-driving. Additionally, I will draw on *Reading the figural, or, Philosophy after the new media* by David Rodowick (2001) for 'doing' the analysis of video advertisements. In his book, Rodowick provides insights in what to look for in video advertisements advertising new technologies, such as consistencies, references to popular culture, and the connotations projected onto technology. The sub-question that is answered in this chapter is: *"How are human-technological relations constituted, and how can they be interpreted?"*

In the third chapter I will explore the method and corpus of the analysis. The chapter starts off by discussing the method of *Critical Discourse Analysis* (CDA) by Fairclough (1992; 1995). This approach gives me the 'tools' I need for analyzing the structure and linguistics of the advertisements, such as finding the advertisement's *interactional control, cohesion, wording, metaphors* and *interdiscursivity.* I will explain why Fairclough's critical discourse approach is partially relevant for my research, resulting in a textual analysis of self-driving video advertisements. This approach is supplemented by using a coding scheme that I have developed using the work of Fairclough and Rodowick as reference. The selection criteria for the corpus of twenty video advertisements are also discussed here. The main goal of this chapter is to find a useable method for answering the sub-question: *"How do the advertisements' linguistics and discourses shape the human and technological representations?".*

In the fourth chapter, by using postphenomenology to interpret human-technological relations and Fairclough's approach to structure my analysis, I will discuss the observations of the human-technological representations in the corpus of self-driving vehicle advertisements. These observations and their analyses are subdivided in "human" and "technology"-related subjects.

The final chapter will conclude this paper by answering the main question on the way how the relationship between the human subject and self-driving vehicle is represented (framed) by automotive designers as having the capability of being of great value in everyday life and traffic with the 'utopian' connotations of increased safety and mobility, with the added bonus of creating time for the driver to spend on other things. The acting capability is represented as being capable to switch back and forth between human and technology as, during the drive, the human driver can prompt technology to take command, prompt technology to return to manual driving, or technology can prompt the human driver to take over the wheel during technical difficulties or when nearing the end of the destination. The vehicle remains a tool for transportation for human drivers to use for their convenience.

2. Postphenomenological framework

To answer the first sub-question: *"How are human-technological relations constituted, and how can they be interpreted?",* and consecutively the main question of this paper, it is imperative to understand the notion of human-technology relations. In order for me to interpret how the relations between humans and self-driving vehicles are constructed, I need to establish a theoretical framework. I will attempt to do this with the works of the philosophers Martin Heidegger (2000), Don Ihde (1979, 1990), and Peter-Paul Verbeek (2005, 2006, 2008) under the ontological notion of *postphenomenology*. Additionally, I will draw upon other research where human-technology relations have been described; namely D. N. Rodowick's (2001) critical analysis of AT&T's advertisement campaign, and use it as a reference for doing my own research, which I will elaborate on in subchapter 2.2. First I will elaborate on postphenomenology.

Postphenomenology is a philosophical approach, consisting of a set of 'tools' and theories for thinking about human-technology relations (Rosenberger & Verbeek, 2015, p.1). In a summary of Peter-Paul Verbeek's book *What Things Do: Philosophical Reflections on Technology, Agency, and Design* (2005), reviewed by the German-born American philosopher Albert Borgmann, Peter-Paul Verbeek states that technological devices ask for a specific way of dealing with them (Verbeek, 2005, p.2). They should be understood as machineries (a self-driving vehicle) that deliver commodities (transportation). Devices keep their machinery in the background, in order to put their commodities in the foreground: these should be delivered quickly, easily, safely and ubiquitously. This implies that devices ask as little involvement as possible with themselves and with their surroundings. Non-device-like things did, and do, not separate machinery from commodity; they engage people (ibid). Driving a 'normal' car requires the driver to shift gears, brake, accelerate, steer, et cetera. while a self-driving car, or autonomous driving, will only ask for it to be turned on and to validate your destination, in order to consume its commodity.

2.1 Philosophy of technology

Multiple phases of the philosophy of technology are discerned by Verbeek throughout his book (Verbeek, 2005). Verbeek's chief concern is the relation between humans and the material culture, and this concern is in fact the distinctive and urgent enterprise of philosophy of technology. He positions himself in the ontological notion of postphenomenology, where subjects and objects mutually constitute each other. Not only do we shape the self-driving vehicle, it also shapes our behavior. While *phenomenology* views things from the perspective of the human, and believes that analyzing daily human behavior can provide one with a greater understanding of nature, a postphenomenological perspective offers a suitable framework for thinking from the perspective of

things. In this ontological perspective, the relation between human beings and their world takes center stage and are viewed as mutually constituting each other. Human beings are what they are because of the ways in which they are present in their world (Verbeek, 2005, p.8). This relation happens via things: human beings act with the help of artifacts and perceive through them. This role of things can be characterized as *mediation*. Things, and in our current culture especially technological artifacts, mediate how human beings are present in their world and how the world is present to them; they shape both subjectivity and objectivity (ibid).

In his book, Verbeek starts off by referring to Martin Heidegger, who is seen as one of the founding fathers of the philosophy of technology. For Heidegger, technology is the way 'being' reveals itself in the modern era, and where technology is the basic and pervasive character of the modern world. Technology in this sense is the framework that precedes and shapes everything we do (Heidegger, 1977). He gives the example of constructing a hydroelectric plant in the Rhine, where it discloses everything as a resource or *standing reserve* (from a river to a source of energy) (ibid, p.7). Verbeek and Don Ihde, another philosopher of science and technology, do not agree with this notion (Verbeek, 2005, p.2; Ihde, 1979, p.96). They both state that one can single out an impressive number of technologies that do not fit the mode of revealing that Heidegger ascribes to modern technology. Verbeek states that most technologies are present in a more-than-functional way, and do not necessarily make humans disclose reality as raw material for manipulation. For example, a telephone does not physically reveal the person on the other side as a resource for our will to power, and a car does not reduce its driver or the landscape to mere functionalities of transportation (Verbeek, 2005, p.2).

Verbeek builds on Heidegger's analysis on the way how tools and equipment reveal a world for an examination of how humans shape technology and technology shapes humans, translated in *Being and Time* (2000). Heidegger discerns two modes of encounter that are used to describe various attitudes toward things in the world and are relevant to this paper: *present-at-hand* and *readiness-to-hand*. These modes of encounter are relevant because they describe two fundamental differences in the relationship humans can have with technology. Additionally, I will use them to position my paper in the ontological notion of postphenomenology. With present-at-hand, one has (in contrast to readiness-to-hand) an attitude like that of a scientist or theorist, of merely looking at or observing something. In seeing an object as present-at-hand, the beholder is concerned only with the bare facts of a thing or a concept, not what it can do. For example, a hammer; when it is broken, it loses its usefulness and appears as merely 'there' to be repaired or discarded. Conversely when one has equipment ready-to-hand, it is described as the way of achieving our most primordial (closest) relationship with equipment (Heidegger, 2000, p.69). When using equipment ready-to-hand, it withdraws from the user becoming experientially (quasi-) transparent; it becomes an extension of

one's body. Using the example of the hammer; when it is ready-to-hand, we use it without theorizing it. If one were to look at the hammer as present-at-hand, one might lose track of the nail and make a mistake. As Heidegger states:

> The less we just stare at the hammer-thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become, and the more unveiledly is it encountered as that which it is—as equipment. The hammering itself uncovers the specific 'manipulability' of the hammer. The kind of Being which equipment possesses—in which it manifests itself in its own right—we call 'readiness-to-hand'. (*Heidegger, 2000, p.*69)

The concepts of readiness-to-hand and present-at-hand need to be understood in order to answer the human-technology relation part of the main question of this paper. At the most basic understanding of human-technology relations: we are either consciously aware of technology (the hammer-thing) or it has faded from our conscious experience and mediates our acting in the world. These two concepts give an understanding of the interactions and relation humans can have with technology. Technological 'tools' can be used in different ways (even unintended ways). With every form of use our relation to the object and experience we have with it differs. However, this duality of either being ready- or present at hand appears to be unfulfilling when applied to (self-driving) vehicles. For example, it can be argued that a regular car operated by a driver is mostly ready-to-hand during a journey. It is used as a tool for transportation where the driver watches the road/traffic and not the vehicle itself. The vehicle becomes an extension of the driver's body in essence, and thus the closest relationship between the vehicle and the driver is achieved. A vehicle driving itself on the other hand does not need a driver, and therefore does not become an extension of one's body in the same sense that a regular, manually-driven vehicle would. Although the vehicle is not used in the same way as when driving manually, it is still used as a means or tool for transportation. While both forms of transportation appear to be ready-to-hand, the exact details of the human-technology relation vary, which in turn would suggest the existence of different gradations of readiness-at-hand.

In order to explore these differences (the way how technology mediates our experience), I turn to the works of Don Ihde (1979, 1990) and Peter-Paul Verbeek (2005, 2006, 2008). Ihde has discerned four human-technology relations, on which Verbeek as added two additional relations. Ihde's approach begins with a typology of human-technology-world relations, which result in different parsings of the general pattern of relations (Ihde, 1990): *Embodiment relations* occur when a device becomes *incorporated* by a percipient as a medium of perception. Upon use, such technologies *withdraw* from the user becoming experientially (quasi-)transparent (glasses, the blind man's stick, and tools like a hammer) (ibid, p.72). In all instances, the tools become a

phenomenological part of the human user and are no longer *perceived* themselves. *Hermeneutic relations* involve reading a technology that provides a *representation* of the external world (compasses, thermometers, clocks) (ibid, p.85). *Alterity relations* occur when technologies are experienced as (quasi-)other: not quite human or simply enabling our own faculties to operate beyond their usual limits (ibid, p.97). They are experienced as something with which we are able to interact in the true sense: it responds to us without being entirely controllable by us (ticket dispenser, vending machine). And finally, b*ackground relations* happen when objects fade into the background of conscious experience (refrigerators that turns cooling off and on automatically unknowingly to us) (ibid, p.108). These relations result in the following parsings of the general pattern of relations:

Embodiment relation	(Human – Technology) > World
Hermeneutic relation	Human > (Technology - World)
Alterity relation	Human > Technology (- World)
Background relation	Human (- Technology - World)

Figure 1: Human-technology relationships (after Ihde, 1990)

In order to answer the main question of this paper regarding the representation of human-technology relations in self-driving vehicle advertisements, I now have more varied and detailed descriptions of human-technological relations than ready- and present-at-hand. The embodiment relation, where a human actor acts into the world using quasi-transparent technological tools as an extension of his body, encompasses the most primordial human-technology relation. According to Verbeek (2006, p.7), Ihde's analysis of this relation is based on Martin Heidegger's concept of ready-to-hand, while Ihde's alterity relation is based on present-at-hand. Although Verbeek does not specify the basis on which Ihde has established his hermeneutic- and background relation, I would suggest the hermeneutic relation to be based on present-at-hand (since we look at the technological tool itself, such as a thermometer) and the background relation on ready-to-hand (since the technology withdraws from the user's conscious experience).

Verbeek (2008) has extended Don Ihde's framework with the notion of intentionality. *Intentionality* is a philosophical term that refers to the state of being about or being directed at an object-referent. Intentionality is the core concept to understand the relation between human beings and their world (ibid, p.388). Rather than separating humans and world, the concept of intentionality makes visible the inextricable connections between them. Human beings can never be understood in isolation from the reality in which they live, because of this intentional structure of human experience. Humans are always directed toward reality. They always think, feel and/or see

'something'. Verbeek's article distinguishes and analyzes three types of *cyborg intentionality*. The term "cyborg" here can be understood as specific blends of the human and the technological. 1) human actions are mediated through technologies such as Don Ihde's relations depicted in figure 1, 2) the technological physically merges with the human creating a 'new' hybrid or cyborg, 3) when human intentionality and the intentionality of technological artifacts are combined to create a composite relation. In addition to Ihde's mediated intentionality of figure 1, the other two relations result in the following parsings of the general pattern of relations:

Cyborg relation	(Human / Technology) > World
Composite relation	Human > (Technology > World)

Figure 2: Human-technology relationships (after Verbeek, 2008)

Technological intentionality, which becomes apparent in Verbeek's composite relation, is an interesting notion concerning self-driving vehicles. When the task of driving is delegated to the computer/machine, it has to have/show some form of intent to fluently function in multiple traffic situations. As the corpus will reveal, the self-driving vehicle does show its intentionality in traffic situations, and is expected to show even more intent in the future. The main concepts of this postphenomenological framework form a vocabulary for technological mediation, which allows me to analyze and interpret the role of technologies in their use contexts. Technological artifacts mediate perception by means of technological intentionality; the active and intentional influence of technologies. They mediate action by means of scripts, which prescribe how to act when using the artifact.

2.2 Framing technology

New technologies in general have illusive attributes that speak to people's imaginations. In its discursive construction: the 'new' technology opposes the 'old' and projects a 'better' state of being onto present-day and future media technologies. The connotation of the 'new' is connected to the idea of progress and a utopian future (De Vries, 2012, p.17): "It signifies change and difference, processes that are often associated with improvement". As chapter 4 of this paper will point out, this way of thinking about technology is shared by various automotive designers advertising their autonomous technologies. With their headquarters and R&D labs located in Silicon Valley and with their ideology promoted in magazines, books, TV programs, websites, newsgroups, Net conferences and self-driving vehicle advertisements, this *Californian ideology* promiscuously combines free-wheeling spirit and the entrepreneurial mindset (Barbrook & Cameron, 1996, p.1). The Californian ideology embodies a profound faith in the emancipatory potential of the new information technologies (ibid).

For the analysis of self-driving vehicle advertisements done in this paper I therefore draw upon the work of D. N. Rodowick (2001), who has critically analyzed AT&T's future-making rhetoric in an advertisement campaign of the early 1990s entitled 'You Will', where in a series of seven thirty-second spots, comprising twenty-one mini scenarios, AT&T stages a technological desire that it promises to fulfill in the near future. Similar to self-driving car advertisements, the promise of qualitative change in our everyday life is portrayed. These promises include commodities such as: security, comfort, convenience and unlimited and unconstrained mobility (Rodowick, 2001, p.205), which sound similar to the promises of safety, convenience and mobility made by Google when they announced their Self-Driving Car Project (Thrun, 2010). In Rodowick's book *Reading the Figural, or, Philosophy after the New Media,* Rodowick formulates three questions concerning digital culture:

> First, how is the nature of representation and communication changing with respect to the digital creation, manipulation, and distribution of signs? Second, how is the form of the commodity changing along with its determinations of the space and time of the market, and the nature and value of exchange? And finally, how is our experience of collectivity changing? (Rodowick, 2001, p.210)

Throughout chapter 7, Rodowick discusses his observations such as consistencies between individual advertisements (e.g. specific age of portrayed characters) (p.204), references to popular culture (e.g. *Blade Runner*) (p.229), and the general portrayal of a utopian future (p.227), concluding how this utopia is not only the "dream" of the individual's absolute control over information, but also the "nightmare" of total surveillance and the reification of private experience (p.234). When looking at the main question of this paper: "How is the relation between a self-driving vehicle and its occupants represented by automotive designers in their autonomous driving advertisements?", all questions formulated by Rodowick, are relevant to my research on the representation of self-driving technologies and human experience. When shifting from manual to autonomous driving, the form of the commodity of transportation changes, as does our experience when making use of the technology. The work of Rodowick on the AT&T advertisements serves as an example of video advertisement analysis for my own approach of the self-driving vehicle advertisements; looking for the representation of technology, human experience, the concept of time as a commodity, and general consistencies among advertisements.

As chapter 4 will show, self-driving vehicle advertisements explicitly state that delegation creates more time to do other things, which in turn changes the way humans experience the act of driving and the commodity of transportation itself. In this research, the word 'delegation' is used as a means of outsourcing human tasks to a computer (i.e. driving). Delegation has received a significant

amount of study within social and organizational psychology and in management science (e.g., Moore, 1982; Leana, 1986, 1987; Milewski & Lewis, 1977).

3. Self-driving vehicle representations

The postphenomenological framework allows me to interpret human-technology relations (the relation between a self-driving car and the driver and/or passengers), by serving as an overview. For example, I can now discern whether a relation between humans and a self-driving technology is present- or ready at hand by using Heidegger's (2000) terminology. Furthermore, by incorporating the relations described by Ihde (1990) and Verbeek (2008) I can explore these relations more in-depth and describe a possible shift from relation 'a' to 'b' when making use of self-driving vehicles. However, since the main question of this paper revolves around the representation of these relations between humans and self-driving vehicles in video advertisements, postphenomenology alone as a theoretical framework will not suffice. To answer the second sub-question formulated in this paper: *"How do the advertisements' linguistics and discourses shape the human and technological representations?",* an approach for textual analysis is required. In order to uncover the representation of the relation between a self-driving vehicle and its occupants in the corpus advertisements (i.e. the written, spoken and visual discourse in the advertisements) I will draw upon parts of Norman Fairclough's Critical Discourse Analysis (CDA) which I will elaborate upon in the next subchapter.

3.1 Critical discourse analysis

Since the analysis of this paper revolves around commercial advertisement videos, which have the goal of promoting and selling self-driving vehicles to consumers, it is imperative to analyze the linguistics and discourses used by automotive designers in order to achieve that goal. The discourse surrounding self-driving cars shapes our perception and understanding of the artifact. Within this research the term 'discourse' is viewed in the wider, modern context of communication and is used to refer to any form of socially situated semiotic activity. Discourse includes the three different elements of language (both written and spoken), nonverbal communication (gestures, facial expressions et cetera) and visuals (pictures, moving imagery) (Fairclough, 1989, p.27; Jaworski & Coupland, 1999, p.7; 38). Before a discourse analysis can be done, it is important to determine which kind of an approach fits the analysis done in this paper, as multiple approaches for such an analysis exist (Zeeman et al. 2002).

For this analysis, the approach of Norman Fairclough's Critical Discourse Analysis (CDA) will be used, which is mainly based on his writings of *Discourse & Social Change* (1992). Confusingly, the label 'critical discourse analysis' is used in two different ways: Norman Fairclough (1995a, 1995b) uses it both to describe the approach that he has developed and as the label for a broader movement within discourse analysis of which include several approaches. Jorgensen & Philips (2002)

place Fairclough's approach (based on Fairclough, 1992; 1995a; 1995b; Chouliaraki & Fairclough, 1999) within this broader movement of CDA (Jorgensen and Philips, 2002, p.60). Among the different approaches to CDA, five common features are identified by Jorgensen & Philips. For the sake of understanding the scope of CDA and the reason why parts of Fairclough's approach fits my analysis, I will shortly discuss these overlapping features. First of all, discursive practices, through which texts are produced (created) and consumed (received and interpreted), are viewed as an important form of social practice which contributes to the constitution of the social world. Secondly, discourse is both constitutive and constituted (ibid, p.61). As social practice, discourse is in a dialectical relationship with other social dimensions. This view of mutual constitution is shared with postphenomenology. Discourse does not just contribute to the shaping and reshaping of social structures but also reflects and is shaped by them (ibid, p.62). As Fairclough states:

> "The discursive constitution of society does not emanate from a free play of ideas in people's heads but from a social practice which is firmly rooted in and oriented to real, material social structures." (Fairclough 1992b: 66)

This view of mutual constitution is an important difference between Fairclough (and critical discourse analysis in general) and poststructuralist discourse theory such as Laclau & Mouffe's *Discourse Theory* (1985)*. Jorgensen and Philips (2002) note that Laclau & Mouffe disagree with this notion of mutual constitution by stating that meaning is created only through discourse (p.62). Thirdly, language use should be empirically analyzed within its social context, which implies engaging in concrete, linguistic textual analysis of language use in social interaction (ibid, p.62). This again distinguishes it from Laclau and Mouffe's discourse theory which does not carry out systematic, empirical studies of language use. Using a specific approach for uncovering the linguistics used in self-driving vehicle video advertisements should result in a more detailed answer on how the human-technology relation is represented than when using a more abstract method like Laclau & Mouffe's (1985) Discourse Theory. The fourth common feature of critical discourse analysis is that it sees discourse function ideologically. It is claimed that discursive practices contribute to the creation and reproduction of unequal power relations between social groups. These effects are understood as *ideological* effects (ibid, p.63). And finally, critical discourse analysis does not understand itself as politically neutral, but as a critical approach which is politically committed to social change (ibid, p.64).

Now that the common features of CDA have been discussed, I will elaborate on Fairclough's model for CDA, and which elements of his approach are relevant to my research and which are less relevant for answering the main question of this paper. Fairclough's CDA approach (Fairclough, 1992; 1995a; 1995b) consists of three inter-related processes of analysis tied to three inter-related

dimensions of discourse. See figure 3.1 for a visual depiction of Fairclough's three-dimensional inter-related approach.
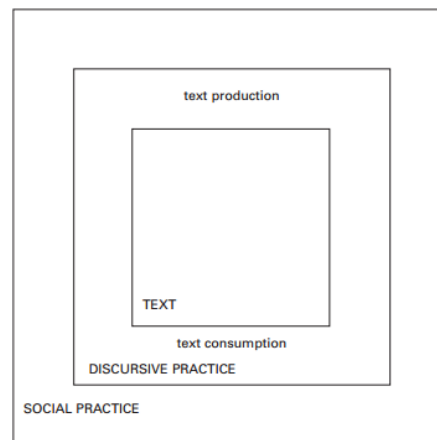

Figure 3.1: Fairclough's three-dimensional model for critical discourse analysis (1992: 73)

The three dimensions of Fairclough's CDA approach are: 1) text, which is the object of analysis (including verbal and visual texts), 2) discursive practice, the processes by means of which the object is produced and received (writing, speaking, designing, reading) by human subjects, and 3) social practice, the socio-historical conditions which govern these processes (Fairclough, 1989; 1995). According to Fairclough each of these dimensions requires a different kind of analysis: 1) text analysis (description), 2) processing analysis (interpretation), 3) social analysis (explanation). This CDA approach is useful because it provides multiple points of analytic entry. It does not matter which kind of analysis a researcher starts with, as long as they are all included and are shown to be mutually explanatory in the end (Fairclough, 1992, p.231). However, the scope of my research limits itself to the analysis of the texts (verbal and visual) and the discourses at play (discursive practice). Since my goal is to uncover how the human-technology relation is represented in self-driving vehicle advertisements, there is no need for me to do a social analysis and research the wider social practice through their relationship to the order of discourse. Hence it can be stated that my approach is limited to "discourse analysis" as the "critical" in CDA contains all three dimensions shown in figure 3.1. As stated by Fairclough, it is in the interconnections between the dimensions that interesting patterns and disjunctions are found which need to be described, interpreted and explained (Fairclough, 1995, p.97; Rear, 2014).

In chapter 8 of *Discourse and Social Change,* Fairclough addresses the practicalities of doing discourse analysis (Fairclough, 1992, p.225). Although it is not a set procedure for doing discourse analysis, it gives valuable insights about what to look for in texts and discursive practices. On the level of discursive practice (see figure 3.1), I will look at the advertisements' *interdiscursivity* and *intertextuality*. The objective is to specify what discourse types are drawn upon in the discourse

sample under analysis and how this is done (ibid, p.232). What is presented, and which other texts or discourses are drawn upon to shape the discursive practice of the advertisement. On the level of text (see figure 3.1) I will focus on *interactional control, wording, metaphors,* and *cohesion* in the advertisements in order to interpret the linguistics used to structure the advertisements' discourse. *Interactional control* is explained by Fairclough as the conventions used to structure a text and ensure a smooth interactional organization (ibid, p.152). It refers to different agents in the text and how they relate to one another. *Setting and policing the agenda* is an example of interaction control; where someone explains what the video will be about, and who will be given a chance to give their opinion. *Wording* looks at meaning construction through the usage of specific words and how they construct a cultural, social or ideological practice (ibid, p.191). I will also analyze the use of *metaphors* in the autonomous driving advertisements in order to uncover their context, meaning, and how it steers viewers to look at elements of the advertisements (ibid, p.195). The objective of *cohesion* is to show how clauses and sentences are connected together in the text. This information is relevant to the description of the *rhetorical mode* of the text: its structuring as a mode of argumentation, narrative, et cetera (ibid, p.235).

Media texts, such as the advertisements that compose the corpus of this paper, can be read or viewed in three different ways. Any text can be seen as a link in an *intertextual chain* (Fairclough 1995b:77): a series of texts in which each text incorporates elements from another text or other texts (discourses). When approaching a text from different angles, the intertextual and interdiscursive links to other texts and discourses become visible. Media texts can be read in a *dominant/hegemonic* way, which means one reads the text exactly as society wants one to do – fully agree with everything said – the way any automotive designer would want its advertisement read. However it can also be read in an *oppositional* way, which means one reads the text in the exact opposite way one is meant to – resulting in one disagreeing with everything written or showcased. Somewhere in the middle lies *negotiated* reading, where one negotiates the message – resulting in one agreeing with some things presented, while disagreeing with other things (Alberts et al., 2012; Hall, 1980). Reading a text purely hegemonic is a form of submission to the power of the text regardless of the reader's own positions, while reading a text only oppositional is a refusal to leave the confines of one's own subjectivity and a refusal to allow otherness to enter. Critically analyzing the self-driving vehicle advertisements requires me to question everything portrayed objectively in order to uncover the discourses and naturalizations at play in the representation of the human-technology.

3.2 Corpus

Prior to selecting the texts for analysis, inclusion criteria have been formulated. These are as following: Only English language advertisements have been taken into account due to the

researcher's inability to immaculately comprehend and thoroughly analyze other foreign language media. Secondly, the video must be an advertisement showcasing the use of (a) self-driving vehicle(s). These advertisements showcasing self-driving vehicles may be posted by automotive designers such as Audi, Hyundai, Mercedes-Benz, Nissan, Tesla Motors, Volkswagen, and Volvo Cars, or by a third party.

A distinction can be made between fully autonomous vehicles and driver-assisted vehicles, due to the fact that while using automated features such as autopilot or autonomous parking the vehicle is driving itself, the feature is temporary and does not last the entire journey from 'A' to 'B' (Tesla, 2014; Volvo Cars, 2015). It does last the entire journey for a fully self-driving car, where manual driving is an option or choice for the occupants of the vehicle, and the phenomenon of transportation itself dissolves into the background of the experience when driving autonomously (Mercedes-Benz, 2015a; 2015b). However, since both forms of autonomous driving technologies construct the discourse around self-driving vehicles, it allowed me to expand and diversify the corpus using both examples of autonomous driving technologies portrayed in video advertisements.

Just as AT&T had its economic motivation for representing the future of communication technologies (Rodowick, 2001, p.215), automotive designers have a clear financial stake in selling their cars. Hence it can be expected that the technology and usage will be shown in the most optimal, and thus biased, way. This economic motivation, which is also present in the self-driving vehicle advertisements, is an example of an interdiscursive 'commodity advertising' discourse (Jorgensen & Philips, 2002, p.82). As described in subchapter 2.2, other than interdiscursivities, Rodowick also analyzes intertextualities and metaphors which fit Fairclough's CDA approach of textual- and discursive analysis (1992; 1995).

The videos have been found via the web search engine Google with the search terms "self-driving car commercial advertisement" and "driver-assisted commercial advertisement". The search query has been used to find advertisements on *Youtube* as well. The videos have a maximum duration of five minutes, and advertise various autonomous driving functionalities. While most of the videos are posted on Youtube by the official accounts of automotive designers, a small portion of the corpus videos have been posted by a third party. For example, whenever a particular video could not be found on the official account of an automotive designer (i.e. Autoblog posting a Volkswagen commercial), the third party poster was selected. However, the showcased advertisements of these third party videos do fit the above mentioned criteria and all add to the discourse surrounding self-driving cars.

As stated by Fairclough, it is common for researchers to code a whole corpus or large parts of it in broad terms, in order to summarizing the discourse or code it in terms of topics (Fairclough, 1992, p.230). Both Rodowick's approach on analyzing various videos such as the AT&T video

campaign, Citicorp TV advertising campaign (p.74), the video *Ici et ailleurs* (p.195), and his analysis of various images such as the New York Times Sunday Magazine (p.207) as well as Jorgensen & Philips's examples of appropriating Fairclough's method of discourse analysis (2002, p.81) have given me practical examples of how to appropriate a method for discourse analysis in order to expose interdiscursive relations, normalizations, metaphors, et cetera. This is useful for my research because it allows me to create a coding scheme, which I will use to structurally look for linguistics, references to popular culture/other discourses, similarities between advertisements, and the showcased people themselves, in order to uncover the representation of human-technology relations in these advertisements.

Before starting the analyses, general information of the analyzed media will be listed down; the title of the video, the duration, the URL, the uploader, the company selling the product, the type of driving automation showcased, and a short overview of the content/narrative line of the video. During the analyses, the coding scheme of table 3.1, appropriated from Fairclough's approach, will be used.

Dimensions	Operationalization
Car brand	Which car brand is used in the advertisement? (Every brand has its own discourse)
Unique selling point	Which *wordings* are used to promote the product and its key feature (autopilot etc.)? How is it used in the advertisement? (wording)
Other features	Which functions/features are highlighted in addition to, or instead of, the USP? What is said about the vehicle to convince viewers? (wording - cohesion)
Efficiency	Closely related to the above mentioned features; In what way is autonomous driving represented as more efficient than driving manually and therefore human-driven vehicles? (e.g. saves time, safer)
Design	What does the vehicle look like? (non-discursive dimension)(interior, exterior, shape, size, colour)
Target audience	Who is featured in the advertisement, and can hence be seen as the target audience of the video?
Social dynamics	How are the human characters of the video portrayed? How does the man or woman occupy oneself? (interaction control)
Notion of family	Do the advertisements show a notion of family? (such as the discussed advertisements of the 1950s)

Table 3.1: *Operationalization of coding scheme variables*

I will now shortly elaborate on the appropriation of Fairclough's approach into the coding scheme. In order to answer the main question of this paper regarding the representation of human-technology relations, the coding scheme has been subdivided into eight variables. The first five variables will

cover the 'technology' aspect and its interdiscursive relations and normalizations through usage of linguistics in the communication event: which discourses are at play (such as promotional discourse, brand discourse, et cetera.), and how the self-driving vehicle is advertised through its unique selling point and other features (which will also give an overview of the vehicle's capabilities and intentionality). Under efficiency I will note how the advertisements position the self-driving vehicle towards a human-driven vehicle (such as being safer or time efficient). The design of the artifact will be described in order to find out how technological prowess shapes the car itself and how it affords certain human actions. The final three variables will cover the 'human' aspect of the human-technology relation, as I will explore how the advertisements connect with the viewer and represent humans and human behavior when making use of self-driving vehicles. How are the benefits of self-driving technologies used by its drivers? The last variable of the coding scheme touches base on Fairclough's social practice dimension, as it functions as an example of how people ought to use the 'free time' that self-driving vehicles grant in today's advertisements as opposed to the way the usage of additional time was portrayed in advertisements in the 1950's and 60's. Although, as stated in chapter 3.1, this research does not explore the social practice dimension in-depth but could be explored in future research. By using the constructed coding scheme appropriated from Fairclough's approach, I can explore the relations between humans and autonomous technologies portrayed in the corpus. The results of the analysis using the coding scheme have been documented in the appendix included in the back of this paper.

4. Analysis results

As mentioned in chapter 2.2, Rodowick's questions concerning digital culture: "How is the nature of representation and communication changing with respect to the digital creation, manipulation, and distribution of signs?", "how is the form of the commodity changing along with its determinations of the space and time of the market, and the nature and value of exchange?", and "how is our experience of collectivity changing?" are relevant to my research in regard to representations, the changing commodity of transportation, and the presented human experience. In short; what I needed to look for in my analysis of the corpus. For my analysis on self-driving vehicle advertisements, I have noted the following from the videos and summarized them in the appendix of this paper. The legend of this analysis can be seen below:

Legend of the analysis results

x = Not mentioned/visible	▓ = Saving time/more freedom is mentioned	▓ = Occupies oneself with leisure
"…" = Spoken discourse	▓ = 'Delegation' is specifically mentioned	▓ = Tasks better executed
… = Written/visual discourse	▓ = Ease of use is mentioned/shown	▓ = Technological intentionality
▓ = Safety is mentioned	▓ = Occupies oneself with work	▓ = Interior changeable to 1950s ad-like representations

First I have noted the written/visual texts and transcribed the spoken discourse. Next, I have looked for the vehicle's presented unique selling points and other features, its advertised efficiency over manual driving, its design, and the way how human drivers (or passengers) are represented in the advertisements. The denoted concepts of safety, delegation, saving time, ease of use, et cetera. are the visible cues represented in the advertisements for the way how the commodity of transportation changes when switching from manual-driving to driving autonomously. These intertextual chains will be discussed within the 'technological aspect' of the human-technology relation. The way how the human experience of 'using' self-driving technology is represented in the advertisements, such as allowing someone to occupy themselves with something else than paying attention to other traffic, is discussed as the 'human aspect' of the human-technology relation.

Representation is the use of signs (something) that stand in for and take the place of something else. Through this representation, people organize the world and reality through the act of naming its elements (Mitchell, 1995). The *communication event*, where language and consumption of the message takes place (Jorgensen & Philips, 2002, p.67), is used by automotive designers as a means to represent the concept of their self-driving vehicle to the public. The communication event in this instance is the video advertisement itself. In *Reading the Figural,* Rodowick (2001) thoroughly describes the concept of representation in digital media. He states that digital media are neither visual, textual, nor musical, but are pure simulation (p.37). Representation no longer exists in the sense of distinctive differences between media, as any sign can be stored digitally and reconstituted

in another form; making indexicality no longer the measure of the 'truth' of the image (p.72). Digital media have the capability to present visual cues and text and speech simultaneously. Additionally, digital images and videos can be remastered or altered in post-production. What is shown in the final cut of the self-driving vehicle advertisement does not necessarily need to be a 'true' 1:1 representation of reality, but would rather represent the best possible scenario in which the vehicle can function. Considering the financial stake companies have in selling their products, showing a product being used in the best possible setting supplemented by promotional slangs, is a form of *cohesion* and *setting the agenda* (conventions) that fit the genre of promotional videos/advertisements. For example, in the video *Hyundai: The Empty Car Convoy,* the autopilot feature is showcased on a closed-off, empty, miles-long country road (HyundaiWorldWide, 2014). Tesla's autopilot advertisement demonstrates the autopilot feature and assisted lane switch feature on a motorway that represents a realistic commute (Tesla, 2016). However, it does not mention what one is prompted to do when the technology fails to perceive or 'see' the lines on the road. Concerning the main question of this paper on the representation of human-technological relations, I will regard the representations shown in the self-driving vehicle advertisements as the best possible scenarios in which the relations between humans and self-driving vehicles are represented.

In order to expose these representations of the human-technology relations, this analysis focusses on the linguistics used in the advertisements and their interdiscursive relation to the discourses of safety, mobility, technological innovation, and durability as stated motivations by automotive designers (Thrun, 2010). In this analysis I will focus on the advertisements' *interdiscursivity*, *intertextuality*, *interactional control, wording,* and use of *metaphors* as described in chapter 3 (Fairclough, 1992; 1995). The coded segments of the video advertisements have been documented and can be found in the appendix of this paper.

4.1 The technological aspect

In the corpus, new autonomous technologies are presented as the 'logical' or 'necessary' next step in the evolution of driving, resulting in the replacement of human interaction and intentionality by technology in some parts of the driving experience. As Fairclough's (1992) *interaction control* requires*,* the message of "autonomous driving being the future" is structured elaborately either by showing the technological capabilities of the vehicle or by representing human and technology as indistinguishable as arguments supporting this claim. This again fits the genre of a promotional discourse that spreads its ideas through consumer culture (Jorgensen & Philips, 2002, p.78). The subcategories that will be discussed under the technological aspect of the human-technology relations represented in the corpus are the references to popular culture, delegating the act of driving to technology, safety, technological intentionality, and the creation of time and freedom by

using self-driving technologies. These subcategories embody the main arguments or references used by automotive designers in order to convince consumer culture of its technology being the next logical step in driving automation.

4.1.1 References to popular culture

As Rodowick's (2001) analysis on the AT&T campaign has shown, it is not uncommon for a company to market its image of the future by capitalizing on the cult popularity of a technology oriented film or television series (p.229), and thus creating an intertextual link with the reality depicted in that particular film or series. There are three to be found within the corpus, which I will briefly discuss. Two advertisements include a reference to the TV show *Knight Rider* (Larson, 1982), by either explicitly using multiple audio clips including the opening theme of the TV show (Autoblog, 2007), or implicitly by starting off with showing a moving light through the grill of the car (Mercedez-Benz, 2015a), which arguably is a reference to KITT. In the Hyundai advertisement (2014), when the autonomous driving is activated and the test starts, *An der schönen blauen Donau* (1867) starts playing. This audio track has been used before in the "grandfather" of sci-fi films: *2001: A Space Oddysee* (Kubrick, 1968) and other advertisements involving technology. The automotive designers project an image of utopia by explicitly adopting the futurist designs of these technology orientated films and series in order to invoke a sense of 'technological progress' in the mind of the viewer. For example, when one hears the Knight Rider tune, the showcased vehicle in the advertisement is associated with the vehicle from the series, together with all its technological capabilities. This is a good example of how a communication event (advertisement) draws on elements and discourses of other texts (television series) (Fairclough, 1992, p.232).

4.1.2 Delegation

The corpus represents driving as an activity that can be fully or semi-outsourced to a machine safely as an activity that is (partly) 'taken over' by a computer. Here, the technology functions as a 'tool' for the human driver to use. With the exception of the video *A First Drive* (Google Self-Driving Car Project, 2014a), delegating the act of driving is represented as optional during the journey. The *interaction control* of the advertisements revolve around showing this capability of delegation implicitly by highlighting the (technical) features of the vehicle and showing the occupants of the vehicle doing other activities than driving, or by using additional specific *wording* in order to highlight a shift in acting capability from human to technology. Examples of this explicit use of wording include phrases such as: "Drive or delegate to autonomous drive" (Volvo Cars, 2016), "the autopilot confirms that the driving and the supervision is delegated to the car" (ibid, 2015), "It parks you" (Autoblog, 2007), "It does the driving for you" (Centraal Beheer, 2014), "It brakes when you don't" (Volkswagen USA, 2015). This implied shift from manual (human) driving towards autonomous (technology)

driving fits Ihde's embodiment and background relations as described in paragraph 2.2. Paraphrasing Borgmann (1984); the more the vehicle becomes autonomous and takes over driving tasks, the more its commodity of transportation fades into the background of the experience. The *cohesion* of delegation is summarized throughout the corpus by highlighting the vehicle's awareness of its surrounding and its ability of safely executing driving maneuvers, as it is done in the video *A Ride in the Google Self Driving Car* (Google Self-Driving Car Project, 2014b) with the wording "Perceiving the environment" and "Making safe decisions". Furthermore, the advertisements highlight technical features such as the autopilot and automatic parking feature, mention the vehicle's wide variety of motion- and optical sensors, or use visual representations to indicate the active sensors. These visual representations of the vehicle's awareness of its surroundings include examples of a pulsing blue aura around the car (Tesla, 2016; Nissan Newsroom, 2015), or a pulsing white aura and additional lines (Volvo Car UK , 2015), which indicate the 'visual' reach and perpetual scanning of the surrounding environment by the vehicle. In one of Google's Self-Driving Car Project videos, where they show the viewer how the technology works, they go as far as to *metaphorically* use the human sensory organs "eyes and ears" to describe the vehicle's motion- and optical sensors (Google Self-Driving Car Project, 2014b). This metaphor links the vehicle's sensors to human senses, and thus creates an understanding of the workings of the vehicle's sensors to the viewer. Using Ihde's example of the refrigerator as reference, it can be stated that although when one drives autonomously and is not needed to pay attention to traffic due to the technology's capability of delegation, as showcased by multiple advertisements (Paolo, 2013; Centraal Beheer, 2014; Volvo Car UK, 2015), the self-driving vehicle remains in the category of the embodiment relation since the vehicle remains a tool for transportation.

Additionally, different gradations of driving delegation are advertised using the same linguistics, which might be misleading to consumers and show the bias of advertisements when compared to videos explaining a certain feature or consumer video. For example, the Tesla (2016) video advertisement first shows us the effortless autopilot feature on a road surrounded by traffic. In the next scene we see the auto-parking or parking-assist feature being advertised with the wording "And parks on your command", which implies full control and delegation from human to technology. However, the consumer video posted by Warricks2005 (2015) portraying a man using this feature, shows us that he has to "Move forward a bit" before the auto-parking feature becomes lit. The same is seen in the Volkwagen advertisement posted by Autoblog (2007), which uses the wording "It parks you". The video shows us a man 'parking' his car with the touch of a button, not needing to hold his steering wheel so he can carelessly enjoy the music playing in his vehicle. This again, implies full delegation of driving by the vehicle. However, a video posted by Volkswagen Nederland (2011) explaining the feature in detail tells us the driver still has to control the pedals of the vehicle, which

means the vehicle only steers while "It parks you". In contrast, the Wired UK (2013) advertisement portrays a woman stepping out of her Audi A7, pressing the 'piloted parking' button on her smartphone, and is then seen walking away from the vehicle. While the woman is away, the vehicle finds itself a parking space in a nearby parking garage without any intervention or human action. These three examples show that the extent of represented delegation towards the vehicle between advertisements differs greatly.

4.1.3 Creation of time and freedom

The main benefit of delegation, as an intertextual chain, is highlighted throughout the advertisements as creating more time and freedom to do other things than driving when the acting capability shifts from human to technology. This main benefit is explicitly advertised using wording such as "Our next feature. Spare time" (Paolo, 2013), "It does the driving for you, so you can catch up to the more impotant things in life" (Centraal Beheer, 2014), "The technology is so reliable, that the driver can focus on something else without having to pay attention to the traffic" (Volvo Car UK, 2015), "It's relaxed, you do nothing. It knows when to stop and when to go" (Google's Self-driving Car Project, 2014a), and is shown implicitly by showing drivers and/or passengers occupy themselves with work or leisure activities. The contents of these activities have been documented and can be found in the appendix of this paper. Additionally, unlike a traditional car, the self-driving vehicle will be able to be prompted to find itself a parking space (Mercedes-Benz, 2015b; Wired UK, 2014) and be hailed to a person's current location (ibid; Tesla, 2016), saving a person additional time of finding and parking the vehicle him/herself.

4.1.4 Safety

Another intertextual chain frequently recurring throughout the corpus is the connection the advertisements make between self-driving technologies and one of its unique selling points: Safety. As stated earlier by Google: by replacing the human driver with technology, the total yearly amount of traffic accidents could be cut by as much as half (Thrun, 2010). The explicit wording of safety, with the intention of convincing consumers of the technology's capability of safe delegation, includes phrases such as: "Ensuring you a perfectly safe journey every time" (Centraal Beheer, 2014), "Making safe decisions" (Google Self-Driving Car Project, 2014b), "Increases safety and convenience" (Tesla, 2016), "the self-driving Volvo will safely handle every aspect of the driving" (Volvo Cars, 2015), and "Volvo's journey to a crash-free future" (Volvo Car UK, 2015). Additionally, the Volvo Car UK (2015) video refers to the discourse of aviation by denoting the fact that the vehicle includes "back-up solutions" whenever anything fails, "just like in an airplane". If the self-driving vehicle is no longer capable of delegating the act of driving, due to bad weather or due to nearing the final destination for example, it may prompt the driver to take over the wheel, thus shifting acting capabilities back to

the human driver (Volvo Cars, 2015). Google (2014b) also notes the connection between social relations and safety by wording it as "if the car abides to social norms on the road it is also safer". This implies the technology's capability to comprehend social norms. Additionally, Google expects a self-driving vehicle to 'feel' most comfortable when the vehicle behaves as 'natural' as possible (ibid). The term 'natural' here refers intertextually to the way human drivers drive their vehicles, which further backs the motivation to replace human driving with technology as 'human-like' as possible.

4.1.5 Technological intentionality

So far, I have discussed how the references to popular culture, the delegation of driving to self-driving technologies, and the intertextual link that is made to safety, all contribute to the promotional discourse advertised by automotive designers to convince consumers these self-driving technologies are "completely safe to drive for you", and them being the next, logical step in the evolution of driving. An important factor seems to be the aim of making the experience of autonomous driving as human-like as possible, as this is expected to make the driver feel more at ease when making use of self-driving technologies. This means that it is important to explore how this replacement of the human driver by technology in a human-like manner is represented in the corpus videos. The postphenomenological concept of technological intentionality, as explained by Verbeek (2008), can be used to interpret the shift of acting capability towards technology.

The advertisements portraying fully self-driving vehicles show complex examples of an autonomous vehicle's intentionality towards specific aspects of reality. Granted, whenever a driver uses driving assisted features such as the autonomous parking feature, it can be argued that when the vehicle activates its turn signals it shows the world its intent. However, in the following examples of self-driving car advertisements, the vehicle gains more of the 'desired' human-like features of acting capability. For example, the video *A Ride in the Google Self Driving Car* shows a vehicle slowly rolling forward "to show its intent" to make other vehicles notice "it wants to go first", implying technological intentionality (Google's Self-Driving Car Project, 2014b). This is a feat that, until now, has only been managed by humans with eye contact and gestures as social norms (ibid, 2014b). Furthermore, the *wording* used in phrases such as "our engineers have taught the software to detect the large vehicles" and "the vehicle understands" (ibid), implies a shift in acting capability from the human driver to the self-driving vehicle.

The Nissan IDS Concept vehicle gains an emoji-like face (eyes) on a screen on the dashboard when switching to autonomous driving (Nissan Newsroom, 2015). This 'face' serves as a representation of the vehicle and metaphorically refers to the technology's acting capability as being human-like (and replacing it) for rhetorical effect. Additionally, the vehicle comes with an exterior indicator, a blue strip alongside the vehicle, that shows pedestrians the car is 'aware' of their location

by showing a light on this blue strip in their direction (ibid). As a pedestrian, when looking for a driver's awareness, the exterior replaces the need for eye contact with the human driver. Furthermore, text projections on a small screen on the dashboard allow the vehicle to communicate with pedestrians (i.e. the wording "After you" to show its intent on letting pedestrians cross the road), which replaces eye contact and non-verbal communication from the human driver.

The last example I will discuss is one of Mercedes-Benz's communication events: *The F 015 Luxury in Motion Future City* (2015b). The 3D video animation represents the company's vision of the future of self-driving vehicles. Although promotional text and speech are absent in the video, the visual conventions fit the genre of promotional video as the 3D animation allows for the perfect conditions in which the vehicle is seen functioning. Additionally, all the major benefits discussed so far: safety, delegation, creation of time and freedom, and technological intentionality are represented in the video. The vehicle's intentionality is represented as its capability to project an indexical relation on the ground before it via a light projector mounted in the grill of the vehicle. These indexical relations vary from projecting an arrow when the vehicle intends to pass a pedestrian, projecting a crosswalk when it intends to allow pedestrians to cross the road, to projecting a 'P' when it intends to park itself somewhere. A human driver is no longer needed for these forms of communication. Furthermore, the vehicle is shown understanding non-verbal gestures and can be heard 'speaking' words, such as "please go ahead" and "thank you"-which can be understood as human-like features. In this video, technological intentionality is represented as proficient enough to replace the human driver completely in order for it to act in the world (and with other human actors).

4.2 The human aspect

Although the corpus advertisements mainly focus on promoting self-driving technologies through highlighting technological features, resulting in less human than technological representations for me to analyze, the people portrayed in the videos do serve an important role in conveying the idea of these technologies being the next step in driving evolution. The depiction of people in the advertisements fit the conventions of the promotional video genre by either being expertly used for *interaction control* and *setting the agenda,* or by showing the human driver and/or passengers making use of autonomous features in a relaxed and comfortable manner which benefits their life in some way. The subcategories that will be discussed in this subchapter are the target audience, the human role of endorsing technology, and the portrayal of humans as passive passengers.

4.2.1 Target audience

The corpus advertisements target different people by showing either only men, only women, or men and women, in a variety of race, appearance, and age. The main target audience is men, as the

advertisements mostly show a male protagonist driving, being driven by, or interacting with, a vehicle with autonomous capabilities (i.e. Autoblog, 2007; Centraal Beheer, 2014; Volvo Trucks, 2013), although some advertisements show a female protagonist behind the wheel of the car (Paolo, 2014; Volvo Cars, 2015; Wired UK, 2013). Additionally, although some advertisements include multiple persons inside the self-driving vehicle, the notion of family in self-driving vehicles as represented by the 1950's and 60's advertisements and Disneyland TV series (1958a), is completely absent. However, there are a couple of attempts to introduce a notion of family. For example, a baby is included in an advertisement by Mercedes-Benz, which shows a presumed father and his baby traveling the road (2015c). And the Volkswagen USA advertisements shows a man and his daughter a stereotypical discussion of dropping the girl off at her school, resulting in the distraction of the human driver and forcing the vehicle to stop itself (2015).

The variety of people represented in the videos fit the promise of self-driving technologies being the next step of driving evolution as it needs to be available for everyone. The important word here is 'everyone'. While most advertisements target the business class by representing them in their 30's, wearing a suit, and doing work while on the move (more on this in 4.2.3), the videos posted by Google's Self-Driving Car project, in particular the video *A First Drive* (2014), represent the self-driving vehicle as having the capability of increasing people's mobility in ways not seen done before by manually driven vehicles. *A First Drive* shows the viewer people that are less or unfit for driving a regular vehicle making use of Google's fully autonomous vehicle. These 'unfit for driving' people are represented as elderly, children, and a blind man. While one might be unable to operate a regular vehicle (such as the blind man), the self-driving vehicle is represented as a tool that increases one's mobility exponentially, and thus empowering people. This empowerment has been incorporated in the advertisement by making the blind man say: "There is a big part of my life that's missing, and there is a big part of my life that a self-driving vehicle would bring back to me". In the first part of the sentence, the wording on 'a big part of his life missing' refers to his blindness making him less mobile. The second part of the sentence follows up on implying that the self-driving vehicle would give him back his mobility.

4.2.2 Endorsing technology
Using people with expert knowledge or experience with a product or people that are well-known to the public to endorse a product fits the genre of promotional video. Some of the benefits accrued from using celebrity endorsers lie in making the advertisement more effective in certain instances, enhancing message recall, and aiding in the recognition of brand names (Biswas et al., 2006, p.1). According to extant literature, expert endorsements enhance the believability of an advertisement primarily due to increased source credibility (ibid). In some of the video advertisements of the

corpus, people are used to fit the role of an expert or celebrity endorser that promotes self-driving vehicles. They attempt to convey positive connotations of automated driving, the technology, and the feeling one gets when driving in an automated vehicle to the viewer. With this usage of people, they play an active role in the interaction control of the video advertisement by setting and policing the agenda of the message. Examples of expert endorsers in the corpus are Priscilla Knox – safety driver for Google (Google Self-Driving Car Project, 2014a; 2014b), Chris Urmson – director of Google's Self-Driving Car Project (ibid, 2014b), and Takashi Sunda (and other employees at Nissan) – Mobility Services Laboratory (Nissan Newsroom, 2015). Additionally, all the people that make use of the technology and are given a chance to elaborate on their experiences of driving in a self-driving vehicle, such as the blind man discussed in 4.2.1, fit the expert endorsement category. Examples of well-known people used in the corpus advertisements are Buddy Joe Hooker – a stuntman and actor (HyundaiWorldWide, 2014), and Jean-Claude van Damme – Actor (Volvo Trucks, 2013).

The endorsers are used to either reassure the viewer about anxieties one might face when shifting from driver to passenger when using autonomous features or simply by stating how efficient the vehicle is. An example of reassurance is seen in the video *A Ride in the Google Self Driving Car* (2014b), where Priscilla Knox addresses an uncomfortable feeling: "as a passenger it can feel a little bit uncomfortable passing by a large vehicle on the road", and follows up with reassurance: "our engineers have taught the software to detect the large vehicles" and "the vehicle understands…", highlighting the safety of shifting the acting capability from human to technology, and explaining how the vehicle abides to social norms and feels natural. An example of people actively shaping the discourse of self-driving vehicles by sharing their positive experiences (metal processes) can be seen in the video *A First Drive* (2014a). Here, a senior man is hear saying: "there is nothing that makes you feel the least bit threatened", followed by the blind man saying the earlier discussed quote: "There is a big part of my life that's missing, and there is a big part of my life that a self-driving vehicle would bring back to me", and "I love this!". Additionally, happy people that are enjoying the drive are shown throughout the advertisement, which fit the conventions of representing an optimal state of usage (or setting) in a promotional video.

In contrast to the examples discussed in 4.1.2, which only show the technology's capability of delegation in order to convince the consumer, the above mentioned examples show the human 'feedback' on shifting the act of driving from a human driver to technology – and enhance the believability of the advertisement due to its increased source credibility.

4.2.3 Humans as passive passengers

The people showcased in the advertisements are not used only to fill the role of actively promoting the self-driving vehicle through expert or celebrity endorsements, but for the most part are shown as

'passive' passengers making use of the technology's capability of delegation. These 'passive' passengers' of the vehicle are represented as relaxed and freed from the 'burden' of having to drive the vehicle manually. They can be seen occupying themselves with either work or leisure activities while the car drives autonomously. Working on the move is represented explicitly as going through a stack of documents (Volvo Cars, 2015), sketching or writing something down (Paolo, 2013), as making a phone call (Centraal Beheer, 2014), or a combination of these (Mercedes-Benz, 2015b; Volvo Car UK, 2015). Leisure is represented as smiling at the scenery (Google Self-Driving Car Project, 2014a), eating or drinking something (Centraal Beheer, 2014), reading a book or newspaper (Volvo Cars, 2016), having a conversation (Mercedez-Benz, 2015b), watching a video (CarWP-US, 2014), or taking a nap (Mercedes-Benz, 2015c). These people are portrayed as carefree and fully trusting the capability of self-driving technologies to delegate the act of driving while they engage in their work or leisure activities. However, this is not a valid representation of people currently using self-driving technologies. When one enters a simple search query such as "consumer autopilot test", the results contain consumer reviews of the same autopilot feature shown in multiple advertisements (i.e. Car Throttle, 2016; Jalopnik, 2015; Barnacules Nerdgasm, 2015). In these consumer videos, the drivers are quite anxious or even scared when activating autonomous driving. Here they are not able to *not* keep their eyes on the road. These anxieties and disbelief are articulated by wording such as "I can't stop looking in front of me" (Car Throttle, 2016), "Oh my gosh… it is changing lanes on its own" (Jalopnik, 2015), "It's a little nerve wrecking" (Barnacules Nerdgasm, 2015), and further articulated by general nervous sounds and hand gestures.

The consumer videos represent a slightly different use of self-driving technologies than the corpus advertisements. For answering the main question of this paper, I again have to consider the fact that the self-driving advertisements represent a more utopic (optimal setting) near future where every user has become accustomed by self-driving technologies (normalized) instead of anxious when using them today. This on itself implies a shift in the human-technology relation over time, as the human drivers have to trust on the technology's capability of replacing them (and the advertisements represent them as able). As discussed in the introduction of this paper, the implementation of the automobile in the 1900's has also taken some time for people to get accustomed to (Chiu, 2008), which arguably serves as an argument for the advertisements' plausibility.

4.3 Representation of human-technology relations

The studied corpus portrays the self-driving vehicle as being the next logical step in car-based transportation. As I have tried to denote in the previous two subchapters, The self-driving vehicle is characterized by, for example, the nominalizations, 'delegation'; 'safety'; 'mobility'; and

(technological) intentionality. It is personified, since a particular is identity being promoted through these nominalizations via automotive designers.   The near future of self-driving vehicles is represented as them having the capability to fully delegate the act of driving, and replacing the human driver. The self-driving vehicle will gain more of the 'desired' human-like features of acting capability, such as not passing large vehicles too closely (Google Self-Driving Car Project, 2014b), understanding non-verbal gestures (Mercedes-Benz, 2015b), and communicating with others via projections on the ground, (ibid), speech (ibid) or text (Nissan Newsroom, 2015). The technology is represented as safe and able to reduce yearly casualties, as it can perceive the environment around the vehicle via a wide variety of sensors (even convention 'dead' angles), has multiple back-up systems whenever a self-driving feature might fail (Volvo Car UK, 2015), and assists the human driver by providing diagnostic information (e.g. warnings) (ibid; Google Self-Driving Car Project, 2014b) and driving maneuvers, such as braking when the driver fails to do so (Volkswagen USA, 2016). Additionally, the delegation of driving by technology provides the former human driver with increased mobility (Google Self-Driving Car Project, 2014a), and the opportunity of spending his or her time on something else than paying attention to traffic, such as work or leisure activities. These are the emancipatory and utopian ideals projected on the technology by automotive designers.

This concept of projecting ideological and utopian ideals onto technology is thoroughly described by Imar de Vries in his book *Tantalisingly Close* (2012). He states that "People who produce predictions about the future make very good use of the fact that the lure of a better tomorrow, be it through the so-called improvement of communication or technology (or both), thrives on the powerful grip that these particular ideographs have on our imagination" (p. 82). As it was also apparent in Rodowick's analysis of the AT&T advertising campaign (2001), the advertisements showcasing new technologies frame products in this "lure of a better tomorrow" -which fits the genre of promotional video.

In postphenomenological terms, the shift from manual to autonomous driving does not fundamentally change the relationship a driver has with the vehicle. As stated by Heidegger in *Being and Time* (2000), humans form the closest relationship to equipment that is ready-at-hand as it becomes an extension of the human body. When driving manually one uses one's feet to accelerate and slow down, one's arms to steer, and one's vision is expanded by the vehicle's mirrors, making the driver not focus on the vehicle itself, but on the road and traffic surrounding it as he uses the vehicle's manipulability to adjust its position in the world manually. When one shifts to autonomous driving, this close relationship does not change fundamentally. The corpus has shown the driver's focus shift from the world outside of the vehicle to work and leisure related activities inside the vehicle (Paolo, 2013; Centraal Beheer, 2014; CarWP-US, 2014). Although the technological extension of the body in the sense of using one's body to manipulate the vehicle is lost when not driving

manually, the vehicle is still represented as a functional 'tool' for transportation, hence I argue it remains ready-to-hand. However, this relationship does change fundamentally when the vehicle is given the command to find itself a parking space as seen in the Wired UK (2013) and Mercedes-Benz (2015b) video advertisements. I would like to argue that when the self-driving vehicle and human driver separate in this scenario, the vehicle is no longer a tool for transportation (as the final destination for the human driver might already be reached). Instead, the object is now looked upon as something that needs to be discarded (parked somewhere) because it has lost its usefulness to the driver, which means that the self-driving vehicle is seen as present-at-hand at this point. When the human driver is outside the vehicle and gives it a command, it responds to the human without being entirely controllable by the human (as seen in the Wired UK video). This fits Don Ihde's alterity human-technology relation (Ihde, 1990, p.97).

Although Verbeek expands Ihde's framework on human-technology relations by adding technological intentionality, both additional relations seem somewhat problematic for interpreting the relation between a human and a self-driving vehicle. To elaborate on this; in none of the advertisements are humans and self-driving vehicles seen physically fuse into an inseparable single hybrid or cyborg entity, unlike when a person gets a pacemaker surgically placed inside his or her chest for example. This makes Verbeek's *hybrid intentionality* or the *cyborg relation* unfit for the relationship between humans and self-driving vehicles (Verbeek, 2008, p.391). The second relation formed by Verbeek, *the composite relation* – which is said to be an extension of Ihde's *hermeneutic relation* – combines both human and technological intentionality. As Verbeek describes: "There is a double intentionality involved here; one of technology toward "its" world, and one of human beings toward the result of this technological intentionality. In other words: humans are directed here at the ways in which a technology is directed at the world" (ibid, p.393). Verbeek then follows up with an explanation of two variants of composite relations by using works of art. The gist of his explanation revolves around the hermeneutic way of how a technology can create a reality impossible for humans to 'see' without that technology, such as using a camera with a shutter time of several hours which eliminates short term events from the picture and by combining 3D equipment with stereographic photographs to create three-dimensional representations of a reality that cannot exist in everyday experience (ibid). Although a screen in the dashboard of a self-driving vehicle can show the driver/passenger a visual representation of the vehicle's surroundings, for example while driving autonomously (Google Self-Driving Car Project, 2014b; Mercedes-Benz, 2015b; Nissan Newsroom, 2015) to show incoming obstacles, or the positions of other vehicles when using an autonomous feature such as auto-parking (Tesla, 2016), these indexical visualizations merely mediate human perception and do not create a world humans cannot see without the help of technology. Looking out the window of the vehicle would result in observing the same setting. Whenever the relationship

between a self-driving vehicle and a driver becomes present-at-hand (as discussed with the Wired UK video), none of the stated human-technology relations by Don Ihde or Peter-Paul Verbeek apply since the vehicle no longer mediates human perception of the world at that point.

5. Conclusion

The notion of disturbances in the human-technology relation due to automation/delegation, discussed by Nicholas Carr, has been the motive for looking into the representation of human-technological relations in self-driving vehicle advertisements. The main question this paper has tried to answer is: *"How is the relation between the self-driving vehicle and its occupants represented by automotive designers in their autonomous driving advertisements?".* In order to answer this main question, I have derived two sub-questions: *"How are human-technological relations constituted, and how can they be interpreted?",* and *"How do the advertisements' linguistics and discourses shape the human and technological representations?",* which I will discuss below.

In order to answer the first sub-question, I have established a theoretical framework consisting of the works of the philosophers Martin Heidegger, Don Ihde, and Peter-Paul Verbeek under the ontological notion of postphenomenology, which has allowed me to interpret how the relations between humans and self-driving vehicles are constructed. Humans and self-driving vehicles mutually constitute each other; not only do humans shape the self-driving vehicle, it also shapes human behavior. There are three variations of human-technological relations to be discerned between a human driver and a self-driving vehicle. As discussed in subchapter 4.3, I argue that when a person makes use of the manual-driving option and drives the self-driving vehicle manually (as can be seen done in multiple corpus advertisements), it is represented as ready-at-hand: an extension of the body, used as a tool for transportation. This human-technological relation has the closest (primordial) embodiment relation due to the fact that the driver uses his arms to steer the vehicle, his feet to brake and accelerate, and his vision is expanded through the vehicle's mirrors. However, as the human driver delegates driving to technology and the acting capability switches to the self-driving vehicle, the 'closeness' of the embodiment relation decreases as driving maneuvers fade from the human driver/passenger's conscious experience. This can be seen in multiple advertisements; when driving autonomously, this increasing distance between the passenger and self-driving vehicle is represented by the passenger focusing his/her attention on work or leisure instead of on traffic. However, in this scenario, the vehicle is still used as a tool for transportation, so I argue that the relationship between the human passenger and self-driving vehicle does not switch fundamentally from Don Ihde's embodiment relation to another technology mediated relation and thus remains ready-at-hand. The third and final variation I argue that exists is seen whenever the human occupants and self-driving vehicle separate (stand outside of the vehicle), as seen with the woman and Audi A7 in the video posted by Wired UK. At this point the vehicle is no longer a tool for transportation, for example: the final destination for the human driver has been reached. Instead,

the object is now looked upon as something that needs to be discarded (parked somewhere) because it has lost its usefulness to the driver, which means that the self-driving vehicle is seen as present-at-hand at this point. Additionally, when the human driver stands outside of the vehicle and gives it a command, the vehicle responds to the human while its subsequent actions are not entirely controllable by the human, for example: the exact parking spot in which the vehicle will park itself. Therefore I argue that this scenario fits Don Ihde's alterity human-technology relation, which implies a fundamental shift from ready-to-hand to present-at-hand.

The second sub-question of this paper focusses on how the discourse of self-driving vehicles is shaped in the advertisements through the use of linguistics and intertextuality. In order to analyze this, I have drawn upon parts of Fairclough's CDA model. I have focused on the framework's dimensions of textual analysis by analyzing the corpus' use of interactional control, interdiscursivity, cohesion, wording, and metaphors, which by doing so results in a discourse analysis rather than a 'critical' discourse analysis. The communication events, being the advertisements themselves, use similar interaction control to convey the message in a structured manner which fit the genre of promotional video; an advertisement shows the technical capabilities of the vehicle via visuals that represent the technology, are verbally explained by experts or celebrities to set the agenda of the video, show potential benefits such as increased safety or the creation of time to do other things whilst driving, references to popular culture, or a combination of these examples. Throughout the corpus, the self-driving vehicle is connected to other discourses such as 'delegation' in *A Ride in the Google Self Driving Car,* 'mobility' in *A First Drive,* 'safety' in *Volvo Drive Me Autonomous Driving Project,* and 'technological innovation' in general as the self-driving vehicle is presented as the next logical step in the evolution of driving. The cohesion of the videos, which can be found in the appendix of this paper under 'USP' and 'other features', consist of a cluster of wordings which represent the self-driving vehicle and additional discourses. The example given in 4.1.2 about "Perceiving the environment" and "Making safe decisions" being cohesive wordings of the video *A Ride in the Google Self Driving Car* serves as a good example. It refers to both the capabilities of the self-driving vehicle, as to what is thought of as a 'safe' drive. Individual sentences, or wording, refer to a specific topic discussed in chapter 4 of this paper, such as the shift in acting capability of the human driver towards technology (delegation) by using wording such as "it knows" or "it does". The metaphors used in the advertisements, although scarce, use human-like attributes such as showing an emoticon-like face when driving autonomously in Nissan's IDS Concept, or referring to the sensors of Google's Self-Driving Car as its "eyes and ears", to imply that technology handles the delegation of driving in a human-like way. As discussed in 4.1.4, a self-driving vehicle is expected to 'feel' most comfortable by its occupants when the vehicle behaves as 'natural' (human-like) as possible.

Conclusively, how is the relation between the self-driving vehicle and its occupants

represented by automotive designers in their autonomous driving advertisements? Self-driving or driver-assisted technologies are represented as having the capability of being of great value in everyday life and traffic in terms of safety and mobility, with the added bonus of creating time for the driver to spend on other things. Currently, in a somewhat symbiotic relationship, the acting capability is represented as being capable of switching back and forth between human and technology as, during the drive, the human driver can prompt technology to take command, prompt technology to return to manual driving, or technology can prompt the human driver to take over the wheel during technical difficulties or when nearing the end of the destination. In a more distant future, the self-driving vehicle is represented as capable of delegating and interpreting all human actions in traffic, thus being able to replace the human driver entirely (and taking human driver error out of the equation). Generally speaking, the self-driving vehicle is represented as a tool for transportation to be used by human drivers for their convenience whenever they see fit during a journey. This usefulness is lost when the human driver is no longer inside the vehicle. However, unlike a traditional car, the self-driving vehicle will be able to be prompted to find itself a parking space and be hailed to a person's current location, saving additional time. Automotive designers frame autonomous driving technologies by projecting 'utopian' connotations of increased safety, mobility, and freedom onto them in their advertisements. With their financial stake in mind, their biased advertisements – which only show optimal conditions for showcasing the technologies, speak to the imaginations of consumers with their ideas of what the future holds for self-driving vehicles and fit the genre of promotional video.

Noteworthy is that the results of this paper are solely based on the 20 self-driving vehicle advertisements that have been selected using the criteria discussed in chapter 3. As hinted on in sub-chapter 4.2.3 with the differences between video advertisements and consumer videos, using other criteria and videos (containing other interaction control, wording, cohesion, etc.) will result in findings that differ from the ones discussed in this paper. Because self-driving vehicles are still in their research phase, the concept vehicles represented to hit the roads in 2018 and beyond are susceptible to alterations, which would also influence the way they are represented in advertisements and thus the results discussed in this paper. When self-driving cars or driver-assisted cars hit the road on a wider scale, this research can be supplemented with research concerning the user experience of driving in autonomous vehicles and human behavior such as similarly done by Stanton & Young in *Driver behaviour with adaptive cruise control,* and Payre & Delhomme in *Fully Automated Driving Impact of Trust and Practice on Manual Control Recovery*. With every new autonomous feature introduced by automotive designers, new material for future research is offered.

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Appendix

Self-driving vehicle advertisements

Legend

x = Not mentioned/visible   ... = Saving time/more freedom is mentioned   ... = Occupies oneself with leisure
"..." = Spoken discourse   ... = 'Delegation' is specifically mentioned   ... = Tasks better executed
... = Written/visual discourse   ... = Ease of use is mentioned/shown   ... = Technological intentionality is shown
... = Safety is mentioned   ... = Occupies oneself with work   ... = Interior changeable to 1950s ad-like representations

| General information | | | | | | | | | Technological aspect | | | | Human aspect | |

#	Title	Duration	Content/narrative line	URL+ uploader	Car brand	USP	Other features	Design	Efficiency	Target audience	Social dynamics	Notion of family
1	Volkswagen Touran Knight Rider commercial | Autoblog	0:31	Man in Volkswagen Touran dances to the Knight-Rider theme while the car parks itself	https://www.youtube.com/watch?v=4tYnj_1dbTU Autoblog	Volkswagen	Parking assistance "It parks you"	Remote keyless system	Black mini-van like car Regular interior	The car parks itself with the push of a button instead of parking manually	Men	Man in casual clothing occupies himself with the music playing	x
2	Volvo commercial	1:43	A woman wakes up late, rushes to get ready and take her sketch tools to meet a man somewhere (who's boarding a train). She finishes the sketch while the car drives itself. When finished, she takes over the steering wheel	https://www.youtube.com/watch?v=bJwKuWz_lkE Pier Paolo	Volvo	Autopilot "Our next feature. Spare time."	Switching from autonomous to manual driving	Golden/orange Volvo V-series (60 or 80, unclear)	The car drives itself without the occupant having to intervene or pay attention to the road	Women	Woman in casual clothing occupies herself with work and scenery before switching to manual driving	The man in the video could be her boyfriend or work-relation. No children in the video.
3	Self driving car (2014) – Centraal	1:00	A man is in the back seat of his self-driving car, cruising through a city.	https://www.youtube.com/w	Volkswagen	Autopilot "It does the	"It automatically takes the right turns"	Silver colored station	The car performs better in	Men	A man in a business suit enjoys the	x

#	Title	Duration	Description	URL / Source	Brand								
	Beheer Achmea (English version)		While the car drives perfectly, other traffic accidents occur due to other drivers/pedestrians being mesmerized by the view of a car that has no person behind the wheel - Giving the commercial a comedic under tone.	atch?v=4E7xHCy1A3g Centraal beheer		driving for you, so you can catch up to the more impotant things in life"	"Effortlessly avoids unexpected obstacles" "And recognizes red lights far in advance" "Ensuring you a perfectly safe journey every time"	wagon Regular interior	traffic situations than 'normal' traffic portrayed in the video, without the help of a human driver			scenery and casually reads the New York Times in the back seat of the car	
4	TRAILER 2014 Rinspeed XchangE Autonomous Vehicle Concept @ Tesla Model S	3:10	A woman gets picked up at the airport. Next we see a couple (a man and the same woman) travel beautiful landscapes, while switching from manual driving to autonomous driving Not traveling through crowded urban areas.	https://www.youtube.com/watch?v=JdbYZK6rtVo CarWP-US	Tesla	Autopilot (no wordings)	- Steering wheel is adjustable to the center of the dashboard. - 180 degrees changeable front seats	Green/yellow stripes Adjustable interior	-	Men and women	When manually driving, only the man is shown driving. When on autonomous driving, the couple is seen changing seats, talking to – and touching each other, relaxing, and watching a video.	Clearly a couple. No children.
5	A First Drive	2:52	The video show people from different age groups and gender test driving a Google car, and giving their opinions about the experience afterwards. - This includes an older couple, middle aged women, a legally blind person, a woman and her dog, and a mother with her son.	https://www.youtube.com/watch?v=CqSDWoAhvLU Google Self-Driving Car Project	Google car	Fully self-driving car "It was a big decision for us to go and start building our purpose field vehicles for this. And, really	"There's no steering wheel" – "It's kind of a space age experience" – "It's relaxed, you do nothing. It knows when to stop and when to go" – "it actually rides better than my own car" – The car drives better than a woman's husband – The car would give a woman more time to spend with her kids. The Google	White, grey doors. Looks like a toy car. -Only has 2 seats, 2 cup holders, and something that resembles a stop button. -No steering wheel, pedals or gear stick present	The car is very hard do compare to a traditional car, since they share very little features It saves time and gives a better/safer feel when being driven by it than when driving one's own car	Men, women, children, animals (about everyone)	The people inside the car occupy themselves with their surroundings and each other. They also seem mesmerized by the experience of being driven without a steering wheel, pedals and the like.	The notion of family is present, since everyone is shown driving the car (except an adolescent man and woman)

							they're prototype vehicles"	representative calls the car 'empowering'				
6	A Ride in the Google Self Driving Car	3:31	The video shows Priscilla Knox. a 'safety driver', driving in a Google car while explaining to the user how the technology works, and what it can do/perceive.	https://www.youtube.com/watch?v=TsaES--OTzM Google Self-Driving Car Project	Lexus	Autopilot "What's it gonna take to improve the comfort, safety and ease of transportation"	"Perceiving the environment" "Making safe decisions" "… the car slowly rolls forward to show its intent" "Improving the safety, comfort and ease of transportation" "Think of the sensors as the cars eyes and ears"	White Sensor on roof of the vehicle Regular interior	Focus on explaining the technology, not proving it's 'better'. However, safety is mentioned multiple times	Everyone	A woman fulfills the role of 'safety driver'. She occupies herself with monitoring the vehicle and explaining the technologies to the viewers of the video	x
7	Google Self-Driving Car on City Streets	1:55	The video shows Priscilla Knox. a 'safety driver', driving in a Google car while explaining to the user how the technology works, and what it can do/perceive in potential scenarios	https://www.youtube.com/watch?v=dk3oc1Hr62g Google Self-Driving Car Project	Lexus	Autopilot	"The sensors spot the orange traffic signs and cones to alert the car of the lane blockage ahead, and we can change lanes safely" "We still have more work to do…"	White Sensor on roof of the vehicle Regular interior	Focus on safety and Google's project being in its research phase	Everyone	A woman fulfills the role of 'safety driver'. She occupies herself with monitoring the vehicle and explaining the technologies to the viewers of the video	x
8	Hyundai : The Empty Car Convoy	3:00	The video shows an autopilot test by Hyundai, done by professional stunt-(men and woman) and drivers on a closed course in a controlled environment. 6 cars in a row driving behind each other with minimal distance and performing an emergency stop. While 5 stuntpeople jump from their cars onto a passing	https://www.youtube.com/watch?v=EPTIXldrq3Q HyundaiWorldWide	Hyundai	Autopilot (Advanced smart cruise control) Smart technology to care for you, because we care for you	"I believe actions speak louder than words" "I guess it works"	Lexus Genesis in the colors white, black, red, blue, and silver	It shows an efficient reaction time when stopping while having a minimal distance between vehicles	More towards men due to the unnecessary 'action' However, there is a stuntwoman in the video	A man fulfills the role of stuntman, putting 'his life on the line' to prove the workings of the technology. He occupies himself being blindfolded and doing nothing.	x

			truck, the front stuntman (and narrator) stays behind in the front car wearing a blindfold								
9	World premiere of the Mercedes-Benz F 015 Luxury in Motion research vehicle - Mercedes-Benz original	2:01	The video starts off with a subtle reference to 'Knight Rider', and then continues to show a futuristic Mercedes Benz car driving through urban areas and empty country road, and shows off all its futuristic features (interior and exterior).	https://www.youtube.com/watch?v=DYTV4d-Gn0s Mercedes-Benz	Mercedes-Benz	Fully self-driving car "Luxury in motion" "The best or nothing"	-Calling the car to the person's current location via smartphone -Sensors - 4 changeable seats, allowing all passengers to face each other - Doors open mirrored to each other - Touch screens inside the car showing interior functions such as music/temperature control - The car tells a pedestrian he may cross the road, while projecting a path on the street	White F 015 Seamless futuristic design (not as traditional cars) Square steering 'wheel'	It shows the perfect self-driving car experience, giving the passengers all the time to do what they want – not having to pay any attention to the world outside. And being safe while doing so	Men	A man in a suit occupies himself with the scenery outside, and inside the car (viewing photo's) adjusting the music and temperature. One shot briefly shows 3 other persons (1 woman visible, 2 unknown) in the car, and them having a conversation. Looks like a business setting	x
10	Mercedes-Benz Commercial: "Self-Driving"	0:33	The video starts off with showing the open, endless road while the narrator describes the experience. Followed by a shot of the car itself, its interior, and the company logo/tagline.	https://www.youtube.com/watch?v=Tna7rU_Tfhg Mercedes-Benz	Mercedes-Benz	Fully self-driving car "This is what it would be like behind the wheel of a self-driving car"	"Sitting just as you are, your hands are not on the wheel, your feet are not on the pedals, and your eyes don't even have to be on the road" "The future of the automobile"	Black Regular Mercedez-Benz car	The video portrays freedom/time saved compared to regular driving	Men and women	No visible people, only an empty steering wheel is shown	x
11	The F 015 Luxury in Motion	3:00	The video shows a 3D animation of a man's life in a futuristic world. He	https://www.youtube.com/w	Mercedes-Benz	Fully self-driving car	-Comes to you when hailed -Parks itself	White F 015 Seamless	It shows the perfect self-driving car	Men	The man occupies himself with the	We see a glimpse of a

	Future City - Mercedes-Benz original		activates *his* car at home and drives to work. While at work, the car parks itself in a garage. The day passes and the man hails the car to his current destination. The same goes for a date the man has the same night. While on the date, the car parks itself somewhere. Additionally we see the car interacting with a human verbally and non-verbally.	atch?v=SlfpZmCCZ_U Mercedes-Benz		Projects it intentions on the road in front of it (cross-over for allowing pedestrians to walk – a "p" for its intentions to park – An arrow for its intentions to move forward)	-Interacts with pedestrians: allows them to walk, and says "thank you" when a pedestrian responds non-verbally to its intention to move forward - Manual driving possibility with the tap of a button	futuristic design (not as traditional cars) Square steering 'wheel'	experience. The car does everything (drive, park) and it even interacts with other traffic		car's interior interface – makes a phone call before arriving at work – Interacts with a woman passenger	possibility for you and your date/girlfriend/wife to enjoy the car together. No kids
12	Mercedes-Benz F 015 TV commercial "Baby" - Mercedes-Benz original	0:56	The video shows a man putting his baby in the front seat (behind the wheel) of the car. The baby enjoys the ride while the man is working on his tablet, and falls asleep later. The car entertains the child in essence, while the man does his things on the back seat.	https://www.youtube.com/watch?v=-PRiaUTaI9M Mercedes-Benz	Mercedes-Benz	Fully self-driving car "Changes everything: our vision of autonomous driving"	x	White F 015 Seamless futuristic design (not as traditional cars) Square steering 'wheel'	It shows the perfect self-driving car experience. The car does everything. Even a baby can 'drive' the car.	Men (single fathers)	The man occupies himself with his work and sleep. Not having to occupy himself with the child. The video does show him looking at his smiling baby occasionally.	Yes. A father and baby are showcased in the video
13	Introducing the Nissan IDS Concept	3:48	The video shows the Nissan IDS concept with all its technological features. It makes driving optional, as it can be delegated to the car with the press of a button. When doing so, the steering wheel, pedals, and gear shift all retract	https://www.youtube.com/watch?v=h-TLo86K7Ck Nissan Newsroom	Nissan	Fully self-driving car "There will be a revolutionary change to the way cars are	Switching between manual and autonomous driving: "Driving will be a choice you make" "You can choose to enjoy the excitement of driving"	Silver, black accents Aerodynamic built car. Looks like a regular car with a futuristic body kit	It shows a clear distinction between driving modes; the car assists the driver when in manual drive, while the car	Men	The video shows a man enjoying both worlds; manual driving with assistance and shows him enjoying the scenery/the car's displays	x

			out of sight. The car is also able to interact with pedestrians.			driven"	-The interior changes depending on the driving mode - Heads up display when driving manually "We want to bring the joy of mobility to everyone" -Sensors The exterior indicator shows pedestrians the car is 'aware of them' by showing a light on a blue strip of the exterior. Text projections such as "After you" allow the car to communicate with pedestrians. -Eco friendly	A steering wheel that looks like a formula 1 racing wheel	gives complete freedom when in autonomous mode. Time is saved due to not having to hold the steering wheel et cetera.		when in autonomous driving mode. Company employees explain the IDS concept to the viewer	
14	Revolutionize Your Commute	1:09	The video shows a man in his house, summoning his Tesla from his garage, switching to autopilot on the motorway, changing lanes with a single tap, and being driven to his destination where the car parks itself with the touch of a button. Showing all of Tesla's driving assistance features.	https://www.youtube.com/watch?v=XB2g7-HgE_g Tesla	Tesla	Autopilot "Increases safety and convenience" "Navigates the curves of the road" "Follows the flow of traffic" "Revolutionize your commute	Summon – Allows summoning of the car with one's smartphone Lane switch – "Changes lanes with a single tap" Park assist – "Parks on your command"	White Tesla model S	The car saves time due to its self-driving features. And it is advertised as being safer.	Men	We see the man in a suit in his home. The shots inside of the car only shows his finger pushing/tapping buttons	x

						”						
15	2016 Volkswagen Passat: Dad, Stop! Commercial (30 Seconds)	0:30	The video shows a man and his daughter driving to her school. The girl does not want to be seen with her father and asks him to drop her off earlier, while the father has no problem with driving her to the front of the school. Due to a sudden stop by another car in front of the car, the Volkswagen autonomously stops, protecting the driver and passenger, and allowing the girl to exit the car.	https://www.youtube.com/watch?v=E6_gMWDJWxs Volkswagen USA	Volkswagen	Forward collision warning and autonomous emergency braking "It brakes when you don't"	x	Silver Regular design with a trunk	The car brakes faster than a human driver would, implying the feature makes driving safer. When the driver is distracted, the car brakes autonomously. (Possibly avoiding an accident)	Men (single fathers)	The man is manually driving the car, talking with his daughter.	Yes, we see a father and his daughter in a stereotypical social situation
16	The Future of Media Streaming in Self-Driving Cars	1:41	The video shows a man in a suit driving to his destination (work?) and switching from manual driving to autonomous driving. The steering wheel and seat slightly retract, giving the man more space to do other things. The rest of the video focusses on streaming media while driving.	https://www.youtube.com/watch?v=hvqeLjVLcAc Volvo Cars	Volvo	Continuous streaming of media while driving. "Uninterrupted bandwidth will require smarter buffering and stitching of network solutions"	Switching between manual and autonomous driving "Drive or delegate to autonomous drive"	Regular interior design. Touchpad where the gear stick should be Big screen comes out of the glove department when switching to autonomous driving	The car gives freedom to do other things when in autonomous driving mode	Men	The man occupies himself with manual driving. When switching to autonomous driving, he occupies himself with reading a book and streaming/watching media (TV-shows et cetera)	x
17	Volvo Drive Me Autonomous Driving	2:52	The video shows the technologies embedded in the car, followed by the car driving itself over the	https://www.youtube.com/watch?v=as	Volvo	Fully self-driving car "Volvo's	"The technology is so reliable, that the driver can focus on something else	Black robust car design Regular	The car is safer "In an emergency,	Men	The man in the video (wearing a suit) occupies himself with	x

#	Title	Duration	Description	Link	Brand								
	Project		motorway, while the video shows shots of the world through the 'eyes' of the self-driving car. The male driver is seen doing other things than watching the road/traffic.	KvI8ybJ5U Volvo Car UK		journey to a crash-free future"	without having to pay attention to the traffic" "Just like good drivers, potentially critical situations are approached with sensible caution" -Failing technology When the technology fails due to bad weather or technical problems (or when the destination is reached) the driver is prompted to take over again. If the driver takes to long to respond, the car will bring itself to a safe stop.	interior	the car reacts faster than most humans" "The final step in driving safely in real traffic" The car saves time "the everyday commute transforms from lost time to quality time – open for work or pleasure – the choice is entirely yours"		making phone calls, doing some work while making a phone call, and eating an apple while smirking at the scenery	
18	Volvo Trucks - The Epic Split feat. Van Damme (Live Test)	1:16	The video shows action-star Jean-Claude van Damme standing in between two trucks with each foot on a side mirror. At the end of his narration about bumpy roads in his life and his body, one truck slowly steers to the side forcing the actor to perform a split. During this time, the actor does not fall off the trucks, showing off the precision of the technology.	https://www.youtube.com/watch?v=M7FIvfx5J10 Volvo Trucks	Volvo	Dynamic steering "This test was set up to to demonstrate the stability and precision of Volvo dynamic steering"	x	Gold trucks + trailers	Dynamic steering is presented as being more precise and stable than normal, unassisted human steering	Men	The man occupies himself with doing a split between two trucks. This is unrelated to the intended use of the technology by the end-user	x
19	Volvo Cars: Explore The	3:01	The video shows the technologies embedded	https://www.youtu	Volvo	User-interface	Autopilot "Groundbreaking	Black robust car design	Safety – "the self-driving	Women	The woman (black, wearing	x

#	Title	Duration	Description	Source	Brand	Feature		Interior	Benefit	Target	Behaviour	
	User-Interface Of Tomorrow		in the car, followed by the customer journey of the woman inside the vehicle. She switches from manual to autonomous driving when possible, and switches back to manual when autonomous driving is no longer possible. During this time, she occupies herself with work and leisure.	be.com/watch?v=xYqtu39d3CU Volvo Cars		"the interface is designed to be intuitive and easy to use" The remaining time of autonomous driving mode is displayed informing the driver how much "free time" is left	project" – "when driving autonomously, the car turns lost commuting time into quality time, by keeping the driver well informed, relaxed and confident that the autopilot is completely in control" "… the autopilot confirms that the driving and the supervision is delegated to the car" -Functions not available during active driving (manual) become available during autonomous driving (films et cetera)	Regular interior Multiple displays, including one that streams film	Volvo will safely handle every aspect of the driving, while you focus on something else" -Peace of mind: If the driver needs confirmation of the autopilot being in complete control, the information is always visible		a suit) occupies herself with work (viewing documents) and leisure (film/newspaper) during autonomous driving	
20	Audi A7: Auto Pilot Car of the Future	4:34	The video shows a businesswoman stepping out of her car, and activating 'piloted parking' on her smartphone. While she leaves for her business meeting, the video extensively shows footage of the car parking itself in a nearby parking garage. When the woman's meeting is done, she summons the car via smartphone. The car is	https://www.youtube.com/watch?v=YEn9bQkBXkE Wired UK	Audi	Piloted parking (Autopilot)	x	Black regular design Regular interior design Tablet sized screen appears out of the dashboard when activating	Saves time You don't need to park the car yourself, which saves time	women	The woman occupies herself with walking to her appointment while the car parks itself in a nearby garage	x

			seen leaving the garage and stopping at her current location. The video ends with the woman manually driving away.					autopilot				