

# Female Subjugation by Default?

An investigation of Gender, Artificial Intelligence & Virtual Personal Assistants

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## Abstract

This thesis studies the behavior of virtual personal assistants through gendered understandings and considerations of artificial intelligence.

The main empirical data was collected through three focus group interviews, a female group, a male group, and a mixed group with the informants being chosen based on a set of criteria relevant to the study. Secondly a survey was conducted, with results considered too unreliable to draw conclusions from, but instead, they served as a point of reference and discussion for the focus groups. The empirical data was used with the selected theoretical framework in order to discover and explore the connection between, on the one hand, research in artificial intelligence and on the other research on how our understanding of gender comes to be.

Methods of analysis include a qualitative analysis of the group interviews, based on a long-table approach, effectively dividing the large data material into smaller sizes, making it the data material more manageable.

Results of the analyzes show the complexity and the apprehensions of touching upon the subject of female stereotypes, while also displaying the contrasting thought patterns that exist when we talk about (artificial) intelligence as part of the technology we surround ourselves with in the form of virtual personal assistants and the influence it (might) have on us as human beings.

The thesis finds that the virtual personal assistants are, of course, influenced by their creators. However, it also presents questions on intelligence and whether or not artificial intelligence should be considered intelligent and taken into account in our actions if it does not or is not capable of expressing and understanding emotions and lacking consciousness. Regardless, as mentioned, artificial intelligence and VPAs have been influenced by our historical views on gendered understandings. That is inevitable, considering the technology's way of "learning." Concerning our future understanding of the female gender, the informants of the thesis were of varying opinions on how current forms of VPAs might influence gendered understandings while agreeing that future iterations will be influential in some way or another.

## Table of Contents

<b>Abstract</b>	<b>1</b>
<b>Table of Contents</b>	<b>2</b>
<b>Introduction</b>	<b>4</b>
<i>Area of Research</i>	4
<i>Research Question</i>	5
<i>Considerations of Scientific Theory</i>	5
<i>Definitions</i>	7
Stereotype	7
Gender	8
Artificial Intelligence	8
Virtual Personal Assistant	9
<b>Research Design</b>	<b>10</b>
<i>Working with gender as a science</i>	10
<i>Grounds for the thesis views of gendered understandings</i>	11
<i>Empirical approach</i>	13
Dirty data: systematic documentation of responses to harassment	13
Focus group interviews: the articulation of naturalized gendered understandings	15
<b>Theoretical Framework</b>	<b>24</b>
<i>Artificial Intelligence</i>	24
The imitation game	24
The division between Strong and Weak AI	26
Consciousness	27
Implementation constraints of strong artificial intelligence	30
<i>Perspectives on Gender</i>	35
Gender as performative	35
Naturalized gendered understandings	40
Reflections on the interaction between Butler and Bourdieu	45
<b>Analysis Strategy</b>	<b>49</b>
<i>Data processing</i>	49
Meaning condensation	49
Long-table approach	50
<i>Analytical approach</i>	51
Deconstruction	51

<i>Analytic levers</i> .....	54
Cultural awareness .....	54
Positions .....	55
Positioning theory.....	55
Cultural recognition .....	56
<b>Analyzes .....</b>	<b>58</b>
<i>Virtual personal assistants, artificial intelligence, expectations &amp; emotions</i> .....	58
A stereotype is... ..	58
Women are emotional, and men are direct... ..	60
Artificial Intelligence is not intelligent... ..	61
VPA behavior reflects the market.....	63
Technology and VPAs are influencing the views on the female gender.....	65
<i>Binary systems</i> .....	67
Naturalized gendered understandings.....	68
Gender as a performative in a virtual existence.....	71
<b>Discussion</b> .....	<b>73</b>
<b>Conclusion</b> .....	<b>75</b>
<b>References</b> .....	<b>77</b>

## Introduction

### Area of Research

Artificial intelligence or AI is a concept that is gaining ground in society, closely linked to other terms such as robotics, augmented reality and virtual reality, Internet of Things, or Blockchain. These phenomena often coalesce under another neologism, the term IT, information technology, a practical abbreviation for these new developments, which connect the spectacular with the more prosaic and familiar. As a trend, they also include well-known media such as the telephone, television, and radio as they are digitized and brought to the same 'technological formula.'

It is an impressive development, which includes a globalizing and internationalizing trend, technically, economically, and culturally, and which actualizes the relationship between the local and the global and mass media's importance and function. At the same time, it challenges primary divisions of work in our culture between, on the one hand, what we traditionally perceive as technical and having to do with the relationship with nature, and what on the other hand is about the social and communicative world, in short, deeply naturalized perceptions of the relationship between materiality and meaning.

It thus touches on well-established theoretical issues within the feminist debate about gender differences and what substance they are made of, about the relationship between gender, culture, and nature, often thematized around the distinction between sex/gender – biological and cultural gender. Not least, the controversies in this debate have contributed to the feminist discussion being an inspirational field for discussions of the dynamic processes at stake in people's work of interpreting and acquiring knowledge of the world, with gender being said to be one of the most fundamental and naturalized ways of classifying and organizing the world. It takes place at the elementary societal level; for example, we are categorized by gender by name and our social security number at birth and then in any bureaucratic context. Moreover, it happens everywhere people meet, as we usually become unsure of the situation if we cannot immediately place people by one or the other gender.

Regardless of how different feminist trends interpret gender, stereotypical representations in which men are connected to the technical and women to society constitute an active filter, both concrete and symbolic, in the cultural enterprise of our society, regardless of the actual movement of men and women. In processes where usual cultural boundaries are disintegrating, there is an

opportunity to clarify and problematize dominant notions of technology, gender, and society, and bring into question other understandings such as:

What is AI? What does gender have to do with AI and virtual personal assistants? How can gender in virtual existences be themed and understood? Why are almost all VPAs female-voiced by default?

## Research Question

The thoughts depicted above have brought me to a research question that touches upon our understanding of the world and the genders we associate our self with as well as the technological influences that are shaking up many of the understandings of the world, we have usually taken for granted:

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How are gendered understandings shaping virtual personal assistants, and what do the technological advances in artificial intelligence mean for future understandings of the female gender?

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## Considerations of Scientific Theory

Foucault aimed to deprive a contemporary its course and to demonstrate that a given truth is the result of history. The goal was to deontologize: By "undressing" a matter of course, the purpose was:

*"... to bring the present truth to an uncertain ground (...) For (...) that new truths can establish themselves" (Jensen, 2005, p. 25).*

Thus, Foucault assumed that there was not one truth, but that the truth would always be different depending on how it is transcended in contemporary times (Ibid.: 26). Thus, there is a diversity of truths, but certain truths would epistemologically dominate and form a *régime du*

*Savoir* (Foucault, 1982, p. 212). This knowledge regime or truth regime was the expression of the truth that prevailed in the given time.

This epistemological point of departure reflects an anti-realist and social constructivist approach to the world: cognition and knowledge are not a direct reflection of reality, but an interpretation of it. Another primary social constructivist feature of Foucault's analyzes was what one might call anti-essentialism (Rasborg, 2009, p. 351): The premise was that there is no predetermined nature in subjects (or in society) that makes them what they are - they are created as a result of social processes:

*"Foucault seeks to show that there is not a human raw material such as the body, the desire or the consciousness that comes before society, but that man becomes a social person - or in other words that nature and history are contemporaneous. "* (Jensen, 2005, p. 20)

So the subject becomes through social construction, i.e., as a result of problematization. The subjective experience does not precede the social and historical but is created precisely in and with the social and the historical (Jensen, 2005, pp. 22-23). The ontological basis of Foucault's works was that the world could only be recognized through the language - reality has an independent existence outside language; but this cannot be reached by human cognition, so that reality must be forced into socially constructed concepts in the language in order to be approximated (Rasborg, 2009, p. 358).

This science-theoretical look creates some implications for the thesis and its conclusions. The thesis has a social constructivist point of view, both epistemological and ontological: I understand both the subject field and the process of recognition as social constructions. However, such a social constructivist approach to cognition covers many different understandings. Where the German sociologist Niklas Luhmann understood recognition as governed by (and possibly because of) operationally closed systems, Foucault understood recognition as historically created. Thus, one has to do with two different approaches (systemic versus historical) to the social constructivist core concept of cognition. In this thesis, I will conduct a contemporary analysis, and I, like Foucault, understand recognition as historically conditioned. Thus, the subject, which acknowledges, has historically been created:

*"The subject dissolves through experience and builds up to something new"* (Jensen, 2005, p. 22).

At the same time, I follow the social constructivist underlying assumption that we characterize and shapes reality as we recognize it. This means that our understanding of the empiricism is that it does not assume a final form that needs to be uncovered - it does not constitute an objective reality that exists independently of our cognition. Even though empiricism is observational, it is necessary to understand that our realization shapes it - it is created in our particular context. For example, it means that through the selection and reading of the empiricism, one sees specific meanings and an inevitable reality. Thus, although the contingent characterizes the analyzes and conclusions, they are not arbitrary. Others may have seen other nuances in the material, but the observations are neither subjective nor arbitrary, but problem-oriented. Thus, I do not occupy any privileged position from which to observe empirically objectively; on the contrary, I am a co-creator of the reality presented in the analysis. This applies not least because the empirical data are temporally grounded in the present. Of course, this should, at the same time, be considered a challenge because it may prove that the historical problem is more evident than the current one - the object is often more apparent at arm's length than quite close, so to speak.

Based on these scientific theoretical considerations, with this thesis, I wish to produce a relevant and plausible knowledge contribution. Contrary to, for example, positivism's ambition of validity, we (as social constructivists) believe that plausibility is the best possible and only achievable result of social science. The thesis will hopefully help to understand and illustrate the connections that appear to occur between AI and gender research. It is not the purpose of the thesis to contribute normatively to how stereotypes should be handled, nor is it the purpose of the thesis to contribute a normative view of the interrelationships between genders. In other words, the thesis has neither a normative nor a feminist aim.

## Definitions

### Stereotype

Stereotypes are simplified representations or conceptions of something or someone. Stereotypes are often directed at gender, age, nationality, sexuality, or religious background. For example, stereotypical representations may be that women cannot drive a car and that men only think about sex. The language helps maintain stereotypes.



This thesis will focus on gendered stereotypes, may be drawn to other stereotypes to make a point. Gender stereotypes are made by exaggerating and simplifying the gender. The stereotypical representations of gender and the easily recognizable gender roles also allow us to identify ourselves with the reality we surround ourselves with. It gives us confidence as an indistinct gender puts a strain on our cognitive capabilities (Kvindemuseet, 2019).

## Gender

Gender identity is one's own sustained inner and individual experience of both one's gender and one's body, as well as ways of expressing one's gender.

One's own identity is also influenced by one's understanding of gender and gender identities. You can have a binary or non-binary understanding:

- Having a binary gender identity is equivalent to defining itself as either (cisgender or transgender) male or female - synonymous with binary gender identity.
- Having a non-binary gender identity is equivalent to defining it as anything other than male or female - synonymous with non-binary gender identity. It is important to note that one can easily be transgender and define oneself as non-binary. (LGBT Danmark, 2016)

This thesis will, for the most part, be based on a binary gendered understanding.

## Artificial Intelligence

Artificial intelligence is systems based on algorithms - i.e., mathematical formulas - which by analyzing and finding patterns in data can identify the most appropriate solution. The vast majority of systems carry out specific tasks in specific areas, for example, control, prediction, and guidance. The technology can be designed to adapt its behavior by observing how past actions influence the surroundings. Artificial intelligence is used in several areas, for example, in search engines, for speech and image recognition, or to support drones and self-driving cars (OECD, 2018; European Commission, 2018).

Artificial Intelligence also has a role to play concerning virtual personal assistants, which will be the main topic of the thesis.

## Virtual Personal Assistant

A virtual personal assistant is a piece of software, which offers a set of abilities traditionally offered by human assistants. Most commonly answering questions and performing tasks by utilizing natural language processing based on artificial intelligence. In some cases, the VPA is paired with a specialized device like a smart speaker, but most commonly, it is considered a feature of more general computing devices such as computers and smartphones. The technology is also referred to as digital voice assistants, intelligent digital assistants, et cetera.

Examples of VPAs include Alexa made by Amazon, Google Assistant by Google, and Siri made by Apple; these three assistants will be the focus of this thesis.

## Research Design

The following chapter aims to explain the scientific theoretical foundation of this thesis, as well as the methodological and empirical starting point. Initially, a number of considerations are discussed regarding the scientific work on gender, and then the rest of the study design is unfolded.

### Working with gender as a science

Working with gender can be quite a challenge, partly because gender is a phenomenon and a biological disposition everyone relates to and has an attitude towards.

How gender is made the subject of science can almost be said to be a science in itself. According to Professor of Social Psychology at the Danish School of Education (DPU, AU), Dorte Marie Søndergaard, gender is a sensitive and engaging topic: Whether one encounters an acceptance of gender as a relevant category or the opposite, and whether it is in everyday thinking or scientific context - it happens as a general rule, with a sizeable underlying commitment (Søndergaard, 2006, p. 11). Everyone has an opinion, and everyone always knows someone who can contradict the fixation of gender that occurs when dealing with gender. In Søndergaard's argument, this fixation of gender is seen more specifically in work on femininity and masculinity, but the argument can also be transferred to other areas of gender research. To this end, the subject matter of this thesis, female stereotypes in VPAs, can be included, where Søndergaard's observation becomes hugely relevant, as this must be understood as a personal relationship between man and "machine," which therefore creates many individual attitudes towards it. For example, if we say that it is a popular opinion that virtual personal assistants should be flirtatious in their response, it may happen that some will try to evade this generalization by claiming that they know someone who does not think so. In this way, the scientific work on gender seems to be fraught with contradictions and thus very complicated, because the work on gender acts on the bystander as a generalization or an allusion to a guideline. This can also be compared to another example where a bank advisor says it is a financially sensible idea to set aside a savings account, and a person then says, "No, because I know someone who does not, and they live fine." To this, it could be asked if the bank advisor's statement is no longer legitimate? It is precisely based on the question of whether personal attitudes toward various scientific

studies may jeopardize the legitimacy of the results that expert statements about gendered tendencies and understandings in dating are unfolded in this view.

One of the most striking trends is that many people regard gender as something private and, therefore, not scientific. Søndergaard describes how in her dissertation: The sign on the body works with the interpretation of a well-known phenomenon such as gender and the perception of this. Søndergaard's request reads that the interpretation of a given phenomenon must be appropriately open so that the reader has room for further interpretation and thus can create new knowledge (Søndergaard, 2006, p. 63). This call thus becomes the starting point for this thesis's methodological approach, which examines the phenomenon, female stereotypes in VPAs, from an optics that allows for further interpretation, as well as the opportunity to create new knowledge that can also be seen in other contexts.

### Grounds for the thesis views of gendered understandings

This thesis is based on two basic terms: first, those gendered understandings are culturally and socially conditioned, and secondly, those gendered understandings are continuously produced and reproduced. These two terms are crucial to explaining as they provide the foundation for the entire work on this thesis, both in terms of the methodological and theoretical choices, but also in relation to the optics that characterize the analyzes.

By looking at gendered understandings in virtual personal assistants, as both culturally and socially conditioned, we settle within a social-constructivist optics, where reality, if one exists, is comprised of a number of phenomena that are viewed as having remained through historical and social processes (Rasborg, 2009, p. 349). Thus, both gendered understandings and virtual personal assistants can also be perceived as socially constructed phenomena. Furthermore, it is understood that reality is fundamentally marked by our recognition of it and is thus a product of human cognition. Individuals are continually negotiating their understanding of social reality in order to achieve a new common understanding that can subsequently be institutionalized among these individuals (Rasborg, 2009, p. 349). Thus, the individual's conception of reality is partly socially conditioned and can thus be recognized only through interaction. On this background, social constructivism is regarded as an advantageous optic that unfolds through my methodological approach in the use of focus group interviews in order to assess how informants'

social experiences about virtual personal assistants - and their gendered understandings - become self-evident repertoires that they use when interpreting and acts in the interaction with the other informants. Furthermore, social constructivism is unfolding in this cultural understanding where it is assumed that the informants also negotiate common understandings of artificial intelligence through their interaction with others in their subcultures.

Based on the aforementioned, it can be concluded that the phenomenon of artificial intelligence, due to its creation of humans, can also be changed by the same humans. It is on this view that this thesis finds a necessity to pre-analyze and articulate the distinct repertoires that can be seen in the informants' interpretation of female stereotypes in virtual personal assistants, as I also believe that the individual has the opportunity for action for change - despite its sluggish character.

Continuing on the above, the post-structuralist approach, deconstruction, is presented as an analytical approach to making the known unknown and to 'divide' the systems of meaning in which reality is intersected in certain ways (Wæver, 2010, p. 201). By using this approach, I also work within a post-structuralist optics, which states:

*"There are no fixed structures and no innocent concepts, so instead of seeing meaning as a relatively simple unfolding of known codes, one must find it in every text. active practices that make sense out of many conflicting layers of meanings that do not "go up." "* (Wæver, 2010, p. 198)

Thus, it can be said that I work on the understanding that meaning cannot be definitively determined and thereby not located, which also adds to the view of the constant negotiation of course repertoires. Furthermore, I believe that there are constant movements and shifts in meaning units that are continually changing and cannot be frozen. There will continuously be new opinions or discourses that are opposed or proclaimed (Görlich & Kirkegaard, 1999, p. 34). It is on this basis that the aim of this thesis is not to make a model of the female stereotypes in virtual personal assistants based on the statements of various informants, nor to make views that seem objectively to the reader. On the contrary, it is desirable to offer an angle on a social reality in motion, which can be used by the reader as a basis for further development and may eventually bring new angles to the gendered understandings in the work of artificial intelligence. At the same time, I must recognize that most people spontaneously operate with a notion that

gender is binary and biologically conditioned, and therefore make every effort to act within recognizable gender understandings.

Finally, something must be elucidated: that gendered understandings are continuously produced and reproduced. This premise is based on the involvement and use of a work by the French sociologist, Pierre Bourdieu; as through his structuralist-constructivist optics, I have the opportunity to elucidate “... *how certain structural power and dominance relationships are created and reproduced, but can also be changed, in given social fields...* ” (Rasborg, 2009, p. 371)

This is because Bourdieu's authorship is characterized by examining, and having a look for;

“... *the relationships between different dominant and dominant positions in the social space...*” (Jacobsen, 2010, p. 365)

Thus, by applying this theoretical look to the subject field, it is possible to analyze how gendered understandings are produced and reproduced and how these can be traced in culture and the technology we develop.

## Empirical approach

The current empirical approach is based on two methods, both of which aim to generate self-produced empirics in the study of female stereotypes in virtual personal assistants. These two methods consist of focus group interviews, as well as the survey. Thus, several methodological approaches are used in the present thesis, which together forms the basis of the empirical approach, in which these must serve in order to complement each other in order to more quickly uncover the complexity of the subject field (Halkier, 2009, p. 15). Initially, the use of a systematic collection of responses to harassment and the use of a survey to categorize them is introduced, after which the methodological considerations, reflections, and choices in the use of focus group interviews are explained.

## Dirty data: systematic documentation of responses to harassment

Taking strong inspiration from Leah Fessler, a reporter at Quartz (Fessler, 2017), I have taken parts of her list of harassing statements based on the Linguistic Society of America's definition of

sexual harassment. The listed harassments, which can be seen in appendix 1, in general, fit into one of the categories, lewd comments about an individual's sex, sexuality, sexual characteristics, or sexual behavior. The insults have been "presented to" and repeated three times for each VPA to check whether or not the responses would vary and if potential defensiveness would increase with ongoing abuse. All responses are written down in order of round, with responses being made easily comparable between the different VPA's. In the case of VPA's responding with inappropriate web-searches, the top hit headline is used.

It is important to stress that these harassing insults are not fully encapsulating of the sexual harassment many women experience on a daily basis; they are only supposed to represent a small sampling of verbal harassment.

### *Survey*

Instead of categorizing the responses myself as done by Fessler, I have bundled them together into an easy and quickly completable survey, which can be seen the appendix 2. The respondents have been given the task of categorizing the responses of the VPAs into categories drawn from Fessler's experiment. The responses show that it is potentially demographically similar individuals who have completed it. That would make sense; the survey has been distributed by members of the owners' association of the building I am living in, which on the one hand makes the respondents entirely unknown for me, but also makes the typical respondent an older (relative to me, and the selection criteria of the focus groups) person not likely to use VPAs themselves. By extension, the results of the survey indicate that people have been significantly faster than expected at fulling out the survey without taking a real stand on the reactions of the VPAs.

The responses of the survey will not be used in its own analysis or to draw conclusions upon, as the result must be considered non-reliable, since it is doubtful that a new or a repeated survey will produce a result that is reasonably consistent with the study just completed.

As mentioned above, the data collected (Appendix 3) not be used to draw its own conclusions. Instead, it will be brought up in the focus group interviews as a means to create a common ground for discussion on the topic of female stereotypes in virtual personal assistants in the groups.

### Focus group interviews: the articulation of naturalized gendered understandings

The purpose of using focus group interviews in this thesis should be seen from Judith Butler's view that:

*"We act as if being a man or being a woman is actually an eternal reality, something that is simply true about us. Actually, it is a phenomenon that is produced over time and reproduced all the time."*

Thus, it appears that this presentation of gender as something true should be deconstructed and that the phenomenon of sex is constantly produced and reproduced. To understand how this truth about gender is produced and reproduced, I find it necessary to use a method that can help to articulate what appears to be self-evident. By extension, Bente Halkier's book on focus groups is included, which explains precisely how individuals' social experiences turn into self-evident repertoires that they apply in their actions and interpretations of everyday interaction with others (Halkier, 2009, p. 10). Halkier goes on to say that these experiences and their use *"of course work so well that the repertoires of understanding are rarely spoken directly."* It is based on this that the use of focus groups is argued since these *"potentially offer the opportunity for the participants in their interaction with each other to express such otherwise silent and taken for given repertoires for meaning formation."* (Halkier, 2009, p. 10). This must also be seen from the fact that in the interaction between people, an opportunity is created, in the negotiation of opinions, to be discursively explicit. Thus, it can be said that the use of focus group interviews in this thesis presents an opportunity to trace some of the truths about gender that Butler argues, which makes it possible to continue to deconstruct the self-existence that exists in the gendered norms of artificial intelligence in 2020.

### *Composition of the focus groups*

In order to gain the most detailed and in-depth insight into the gendered understandings that dominate virtual personal assistants, I have chosen to conduct three focus group interviews in order, in this way, to conduct comparative studies of informants' statements across the focus groups. Furthermore, the number of focus groups has been decided on the belief that the meaning-making process may vary depending on whether men and women are present at the same time, which is why I find it necessary to compile the interviews into a male group, a female group and a group with both men and women. I, as a result of this, also contribute to a perception



of gender as a fixed and binary size. The idea of putting together the focus groups on the basis of the informants' gender can also be seen in the aftermath of the large amount of empirical information obtained in connection with the preparation of the thesis from articles, the internet, and the data gathered, which together form a picture of advice, guidance, therapy, and discussions about gender are divided into male and female groups, as well as a picture of a difference in men's and women's experience of gender and its significance. It should be pointed out that by putting together the focus group interviews on this basis, I also challenge my own beliefs.

By putting together the focus groups based on the three categories mentioned above, I further elaborate on Halkier's appeal to make a selection that is analytically selective in order to be aware of essential characteristics of the informants that must be in line with the thesis field: female stereotypes in virtual personal assistants (Halkier, 2009, p. 27). Thus, through the three different focus group interviews, it becomes possible to gain insight into the notions and attitudes about gender and artificial intelligence that exist in men and women - both in discussion with and in isolation from one another. It is thus intended to focus on the dynamics that arise internally in male, female, and mix groups and analyze across the different experiences expressed during the interviews.

### *Selection of informants*

There have been a number of complex considerations in the selection process of informants since, from the beginning of the present thesis, there has been fundamental attention to the choices to be made in relation to the composition of the focus groups. As was mentioned in the above, especially gender has been the decisive factor for the composition of the three focus groups to which familiarity with the use of new technology, and age also has been critical criteria in the selection of informants. This must be seen from the wish that the informants within the groups can find a suitable degree of recognizability in the use of virtual personal assistants and experiences with technology (Halkier, 2009, p. 29). Based on the above criteria, it was decided that the informants should all be between 20-40 years old and identify themselves as being comfortable with new technology. However, there are a number of well-documented arguments behind these selection criteria: a closer look at national statistics shows that people in the age group 20 to 39 have the largest proportion of users operating home appliances using smartphones, which will also be a typical use of virtual personal assistants (Statistics Denmark).

From this, it can be argued, respectively, that the maximum age of the informants should be 39 years. By extension, it has been decided that the minimum age for informants should be 20 years. However, the group under 20 is only a few percentage points below the other group; the age difference between the youngest and oldest informants must not be too significant. These delimitations of the informants' personality characteristics must contribute to better communication among participants, speaking from a life situation that has a number of basic conditions in common (Halkier, 2009, p. 28). Thus, I mean being able to create a conversation room in the focus groups, where the informants can generally speak from the same current life situation and also have the opportunity to overshadow other differences in the social background such as upbringing and education.

Further to the above, another relevant selection criterion is the choice to find informants who do not know each other in advance. This must be seen from the view that for many people, gendered behavior is so naturalized that there is a need for the informants during the interviews to force each other to be very explicit about their attitudes and behaviors. According to Halkier, the composition of informants who do not know each other can precisely serve the purpose mentioned above by not taking anything for granted by each other's understandings and concluding that in this way more differentiated perspectives forward in the interview situation (Halkier, 2009, p. 29). Furthermore, it is mentioned that this approach can reduce social control among informants by avoiding that the informants behave internally according to established dominance relations. On this background, I have decided that informants should not know each other so as not to speak into familiar discourses that may exist among friends whom they are comfortable with and in the interaction, are not used to challenging their own beliefs (Halkier, 2009, p. 29).

### *Recruitment of participants and its challenges*

The method of recruiting participants for the three focus group interviews consists of a combination of two methods: social media recruitment and snowball sampling. Initially, a letter was formulated explaining the purpose of the interview and, at the same time, communicating a clear demarcation of the informants desired for the focus group interviews. Thus, in this posting, I have incorporated a screening element that aims to make a specific inquiry to the informants who fit the aforementioned selection criteria (Halkier, 2009, p. 31). By extension, I use the featured social media post, Facebook, to disseminate knowledge about my demand for focus group informants. Thus this latter method, for recruitment, becomes part of the so-called snowball

sampling, as I use my network to share the posting - however, it should be mentioned here that I must not get informants who are part of my network, but instead to use the network to find informants in their respective networks so that I do not know the informants (Halkier, 2009, pp. 31-32).

During the recruitment phase, a number of problems have arisen, which have resulted in me having to change strategy. Besides, in the beginning, I received more inquiries from women predominantly through the two methods I used. For this reason, I was in lack of male informants to fill both the male focus group and also to fill the mixed group. Given this situation, it was decided to extend contact with informants, also by making direct contact with my network through telephone contact, to ask people in their respective networks whom they thought might be interested in participating and who also fit on my selection criteria.

### *The moderator role and ethical considerations*

There has always been a tremendous ethical consideration concerning the contact with the informants as well as the actual conduct of the focus group interviews. First, I aimed to comply with all four ethical rules as prescribed by Halkier (2009):

1. The principle of anonymity, where all informants are promised complete anonymity in the data processing in the thesis.
2. Transparency requiring all informants to be informed of the purpose of the focus groups.
3. Follow-up, which deals with a realistic offer of follow-up on the importance and use of the focus groups in the thesis, to which informants were all told that they were more than welcome to contact me if they wanted a copy of our thesis. Thus, I have not promised them anything concrete in the form of a written summary of this thesis but instead allowed them to view the entire thesis if desired.
4. Moderator behavior is a final, and fundamental ethical principle, which I have intended to meet in all three focus groups, as my role as moderator has been intended to be extremely withdrawn to allow the conversation to be guided by informants (Halkier, 2009, pp. 63-64).

In keeping with the above four ethical principles, another and equally relevant ethical consideration has been to accommodate the very private and possibly 'vulnerable' experiences

that may be involved in the understanding of gender and which I urge the informants to explain to the others in the focus groups. Kvale and Brinkmann (2009) write that ethical problems in interview research arise mainly because of the complexities involved in 'exploring people's private lives and making public descriptions' (Kvale & Brinkmann, 2009, p. 80). It is thus my intention that I deal with a topic that is partly in the private sphere of people, but which is also extremely complex, as it is determined by personal preferences, sexuality, relationships, et cetera. This attention became particularly relevant in the interview situation itself, where I endeavored to meet this sensitivity, which we perceive is associated with talking about and discussing private matters such as gender and gender understanding, especially in relation to artificial intelligence, which can be very abstractly understood by many. According to Søndergaard (2006), this can be done by using parts of the clinical psychological interview technique, where the approach is the seeking, and exploratory style that seeks to tone down the normative - here is understood a “... *shielding the conversation space from the surrounding society's standards and norms. ...*” (Søndergaard, 2006, p. 71) - Moreover, a collaboration that takes place on the other's premises in relation to the preparation of meaning structures. Besides, Søndergaard further mentions that it is also essential that the moderators take into account that the informants do not feel uncomfortable during the interview, which may occur if the questions become too transgressive concerning private experiences.

Thus, based on these ethical considerations, there have been a number of different considerations associated with my role as moderator and especially in the interaction with the informants as well as the subject field. It was decided that the starting point for the moderator style should be defined as withdrawn, inquiring, and significantly downplayed in order to make the informants the dominant experts in dating. This approach to the moderator role is inspired by Søndergaard's work in which she writes about her interview style: If you consider any interaction as a negotiating breach of cultural actors' expressions and intentional intentions, I intentionally presumed my expression as mostly intentional and intentional, when it came to anything other than the interview. In conventional modes of interaction, such a relationship usually results in others taking over the definition power with their expression and intentionality, which is precisely what I wanted in this context when it comes to generating thematic content (Søndergaard, 2006, pp. 70-71).

Søndergaard, therefore, worked with an interview-style in which the interviewees were assigned the defining power in relation to the themes of the individual interviews. As mentioned, it is with inspiration from this that I approach the same method for the moderator role. The argument for using this approach must also be seen from the awareness of having a dual role in this thesis, where I both work as a researcher while being part of this field of research. The reason I am part of our field of research is justified by the fact that it is my world of life that I am investigating, both by being part of the target group and by inevitably contributing to and being conditioned by the terms, that female gender stereotypes are shaped and shaped by. On this background, it has been essential for me as a researcher to take on a more humble role as moderator, in which I let the informants be the primary sources of knowledge, so that my understandings form the basis of the question guide, but do not guide the dialogue during the interviews.

As mentioned earlier, it has been decided to facilitate three focus group interviews, where the composition of men and women has formed the basis for this. In this regard, I have had to make it clear that, as a male moderator, I can influence the dynamics within the groups. This can be expressed, for example, in the pure women's group, where the composition of exclusively women is interrupted by a male moderator, to which I must pay particular attention to the importance of my presence in a space that is otherwise dominated by women's perceptions and statements. By extension, this also applies in the focus group consisting of only men, where, as a male moderator, I might even contribute to a more open and explicit dialogue. Whether my presence as a male moderator has a bearing on the conduct of the interviews, I would like to pay particular attention to in the processing of the data material and subsequently the analyzes, but I will not be able to say entirely whether the results would have been different in the case of that I had used a female moderator.

Given the above, there may thus be several limitations in the use of focus group interviews. To this end, there may be additional limitations as to what confidences can be generated from the individual informant. For example, there may be moderated statements where you avoid telling bad experiences with gender stereotypes; for example, you may have felt offended, downplayed, disappointed, or ashamed. Stories about such experiences will probably not be explicit in the focus group interview, which in its form can be generalizing and normalizing, as this is a forum that is, to some extent, consensus-seeking.

### *Structuring and conducting the focus group interviews*

To meet the need for a low degree of moderator involvement, I also found it necessary to structure the focus group interviews based on the mixed funnel model, which brings together elements from both a loose and tight model where informants' perspectives and interaction are prioritized, but where, however, space is also given to one's research interests (Halkier, 2009, p. 40). Based on this view, I have chosen, as mentioned earlier, to be a moderator whose role will be to facilitate the interviews within the framework of the question guide (Appendix 4) - which, based on the mixed funnel model, consists of partly open and closed questions - for this it is also important to remember to ask in-depth questions, as well as to focus on the internal dynamics of the focus groups. It should be mentioned that as a moderator, I am consistently conscious of not becoming too dominant in space, and thus primarily get the character of being interested in the informants' statements and their knowledge of artificial intelligence and their experiences of female gender stereotypes.

The question guide has been designed based on the subject area of this thesis - to examine the role of gendered understandings in relation to the use of VPAs and what influence it has on the perception of the female gender - from which three areas form the basis of the questions: stereotypes, extracts from the survey and the influence of technology on gender understandings. Two of the areas have further focal points. The area of stereotypes is characterized by discourses that are understood here as the ideas and norms that informants are influenced by and understand. Furthermore, the excerpts from the survey should be understood as a starting point for discussion and serve as a basis for conversation.

Based on the themes mentioned above, it is intended to be able to use these as 'sections' in the analyzes in order to show our recognition interest from different perspectives, which have already been made visible to me as necessary focal points during the initial work.

Finally, it was planned that all three focus group interviews should be held over two days at the Regus Office Hotel at City Hall Square in Copenhagen, and each has a duration of approximately 60-90 minutes. The location of the interviews was decided based on a belief that these should be held in a neutral place where, as moderators, I did not have an affiliation, but was easy to reach for all the informants. Also, the interviews had to be recorded as audio files on a computer and iPhone to ensure the best possible quality for further processing of data.

Lastly, it is important to mention that the interviews have been conducted in Danish, to enable the informants to express themselves as clearly and accurately as possible. I do recognize that there is an interpretation in every translation.

### Implications of COVID-19

Following the restrictions put in place to reduce the spread of the coronavirus, my planned focus group interviews had to be re-thought. Instead of a physical meeting, the group interviews were moved to Skype, any video conference or meeting software could have been used, but I have chosen to conduct the interviews on the platform I am more comfortable with.

Skype interviews differ from physical interviews in that they are asynchronous in space. It brings with it a number of benefits regarding accessibility to the interviewees over the physical interview. The disadvantages are also linked to the asynchronous space, which gives limited access to the observation of the social interaction in the interview and can negatively affect the contact and the interviewees' motivation to participate in the interview. The main disadvantage of interview arenas in the asynchronous space that Skype creates is the limited access to the observation of social interaction in the interview, and the absence of opportunities to support the dialogue through non-verbal bodily communication forms. The disadvantages have also been expressed in the form of a need to be more involved than planned, which must also be recognized as a potential source of error.

### The groups

The following are three models of the final design of the focus group interviews, in which all informants are given aliases according to the principle of anonymity:

Focus Group 1: Female Group		
Name	Age	Occupation
Annemette	24 years	Student (Medicine)
Camilla	37 years	Customer service officer
Clara	29 years	Student (Political science)
Elena	24 years	Student (IT)

*Table 1 – Female Focus Group*

Focus Group 2: Male Group		
Name	Age	Occupation
Frederik	27 years	Student (Hospitality management)
Mathias	24 years	Bank advisor
Michael	31 years	Secondary school teacher
Peter	23 years	IT security advisor

*Table 2 – Male Focus Group*

Focus Group 3: Mixed Group		
Name	Age	Occupation
Julie	26 years	Lawyer
Linnea	26 years	Museum guide
Mads	25 years	Student (IT & communication)
Thomas	23 years	Student (Communication)

*Table 3 – Mixed Focus Group*



## Theoretical Framework

Across the world, in cultures independent of each other, gender plays a vital role in the identity of each individual, but also in the way humans interpret each other's emotions, thoughts, and actions. At the present time, AI and VPAs are available to most who own a modern smartphone that, at this time, more often than not come prepackaged with a VPA, a VPA that for the most part is "equipped" with a female voice as standard.

The following chapter will map out the theories used in this thesis to explain how the above came to be and explore what it might mean for our future understanding of gender differences.

### Artificial Intelligence

Artificial intelligence (AI) are machines capable of considering, learning, and making decisions at the same level as a human. Alan Turing, in 1950, thought up a variation of an old game called, Imitation Game, which was later popularized as the Turing Test. The Turing test is designed to provide a better alternative to the question, "Can machines think?" As he found that the question proposes a quantitative answer, as there are many different opinions as to what "thinking" is. I will not conduct a thorough review of the Turing test, but I will present a brief outline of it.

#### The imitation game

The Imitation Game is about isolating a man (A) and a woman (B) from a third person (C); it is for C through questions to find out who the woman is and who the man is. The questions are typically mediated through a fourth person or, more recently, through a textual-based media. The reason for this is that only the meaning of the answers should reveal anything, not the voice or other apparent giveaways. Turing suggests an imitation game in which person A or B is replaced by a machine, and if the machine can deceive C, you can call it intelligent. However, it is essential to note that Turing did not believe that one game is enough; in the same way as the original imitation game, you have to perform several games and look at the statistical context - are there as many errors between machine and human as were previously committed between man and woman? (Turing, *Computing Machinery and Intelligence*, 1950, p. 1 The Imitation Game)

### *Strengths and shortcomings of the Turing Test*

The strengths of the Turing test are that it is possible to talk about everything, as Turing himself mentions it:

*"The question and answer method seem to be suitable for introducing almost any one of the fields of human endeavor that we wish to include."* (Turing, Computing Machinery and Intelligence, 1950, p. 2 Critique of the New Problem)

There is thus an implicit requirement that the machine must understand not only the words but also the subject; that is, the machine must understand not only the syntax but also the semantics. This is a point that John Searle also touches on, which I will return to. Furthermore, in order to pass a well-designed Turing test, a machine must be able to use natural language, reason, and possess and be able to acquire knowledge. You could also extend the test to include visual input and other sensory input in the form of objects that could be submitted to a given person, who would then be referred to either in the form of identification or trait questions: "Is the object I submitted soft or hard? ", "What does the object look like? ". This means that a well-formulated Turing test can address all - or almost all - properties that man possesses.

However, there are also weaknesses in the Turing test. It is consistently anthropomorphic in that it directly compares a human being and a machine. Thus, the machine must not only be intelligent but be humanly intelligent. Human behavior and intelligent behavior are not necessarily identical, and there are several scenarios imaginable where an otherwise intelligent machine might fail. A person has many limitations, such as calculation speed, why an otherwise intelligent machine will fail the Turing test if it can calculate a given calculation too quickly. Furthermore, humans can mislead and lie, which is challenging to incorporate into a machine. Turing even considers anthropomorphism, writing:

*"The game may perhaps be criticized on the ground that the odds are weighted too heavily against the machine. If the man were to try and pretend to be the machine, he would clearly make a very poor showing. He would be given away at once by slowness and inaccuracy in arithmetic. May not machines carry out some-thing which ought to be described as thinking but which is very different from what a man does? This objection is a very strong one, but at least we can say that if nevertheless, a machine can be constructed to play the imitation game satisfactorily, we need not*

*be troubled by this objection.*" (Turing, Computing Machinery and Intelligence, 1950, p. 2 Critique of the New Problem)

Furthermore, the Turing test is explicitly behavioral in that it only looks at the behavior of the participants. This means that a machine capable of performing the Turing test does not necessarily have a mind and is intelligent, but merely a simulation of human communicative behavior that can be performed through a rule-controlled system. One of the major proponents of the criticism of the behaviorist part of the Turing test is John Searle, who, with his Chinese Room argument, tries to reject the Turing test as showing real intelligence. Furthermore, Turing himself makes a counterargument to this doubt of consciousness in the machine.

A final immediate weakness - and strength - of the Turing test is that a person can lose the imitation game as it is based on a subjective judgment of behavior. However, this is rectified by looking at a quantitative count of several imitation games and seeing if the machine scores significantly different from the human actors.

### The division between Strong and Weak AI

John Searle (1980) is the first to make the division between Weak and Strong AI in his Chinese Room argument. As Searle puts forward his argument, it is in the context of the ongoing evolution of AI in the simulation of human cognitive capabilities. In this context, he divides between a Weak AI hypothesis, where the computer is merely a tool to formulate and test hypotheses more exhaustively and accurately, and a Strong AI hypothesis, where the computer is seen as not only a tool but if appropriately programmed, a real mind that has cognitive states and understands what it "simulates." That is, one can summarize Searle's division as follows:

- Weak AI: A physical system of symbols that can behave intelligently
- Strong AI: A physical system of symbols that has a mind and mental states; and is intelligent.

In Searle's terminology, both a Strong and Weak AI could perform a Turing test, but only the Strong AI would be intelligent. This is not the standard view of Weak AI, which today is also called applied AI or narrow AI, and is used for particular purposes, such as optimizing data, controlling specific organizational problems or anti-virus heuristics. The Weak AI thus exists

today and has a “problem crusher” role on specific problems, which it typically solves faster and more efficiently than a human can.

### *The common perception of Strong AI*

The common view of Strong AI depends very much on what theorist you ask about the subject. The futurist Raymond Kurzweil summarizes the common view; thus, an Artificial Intelligence that matches or is more excellent than human intelligence (Kurzweil, 2005, p. 260). This view is intuitively easy to understand but implies that one has to explain what human intelligence is and what requirements exist before one can think of anything too intelligent.

Also, several qualities, besides the mind, can be set up for something intelligent, such as being able to communicate in natural language (see the Turing test), self-awareness - the existence of ego and thereby an identity - and a location that allows for action in the world and manipulation with objects (which is approaching robotic studies). Others will argue for intentionality and free will, originating from original thought and ideas as essential in an intelligent being.

These many different requirements are all debatable, and it is frequently. For this reason, I will not attempt to address all of them in this thesis due to the apparent limitations. Some theorists believe that all the above requirements, and in some cases more, must be met before you can count something as a Strongly Intelligent Being. Others believe that not everything is necessary since an intelligent being does not have to have all the potentials that a human has. One could argue that the requirements are often set so high for an AI that some people will also fall through, which is why several ethical issues arise regarding the mentally disabled and others with properties that limit them. However, I will not take part in this discussion.

### Consciousness

*“I am writing a book on magic,” I explain, and I am asked, “Real magic?” By real magic people mean miracles, thaumaturgical acts, and supernatural powers. “No,” I answer: “Conjuring tricks, not real magic.” Real magic, in other words, refers to the magic that is not real, while the magic that is real, that can actually be done, is not real magic” (Dennett, The Magic of Consciousness, 2006)*

Daniel C. Dennett quotes a well-known magician here, noting that just like magic, people have it with consciousness. A typical conception of consciousness is that it just bypasses explanation because when an explanation is made, the answer is "it is not true consciousness." There is a tendency for people to fall into a mystery for consciousness, which is an argument based on ignorance or, as Turing writes in the objection, with a slightly different context: "heads in the sand" argument. Where Turing rejects the discussion of consciousness, because of his polite convention, this discussion is fascinating.

### *The rejection of dualism*

In short terms, Dennett rejects dualism, where the mind and brain are two separate, yet connected, in *Consciousness Explained* from 1991. He writes:

*"This fundamentally antiscientific stance of dualism is, to my mind, its most disqualifying feature. (...) It's not that I think I can give a knock-down proof that dualism, in all its forms, is false or incoherent, but given the way dualism wallows in mystery, accepting dualism is giving up. "*  
(Dennett, *Consciousness Explained*, 1991, s. 37)

Thus, there is an abandonment in accepting dualism, since there is a bypass of scientific evidence, which means that, in the dualistic view, the mind will not be proved. This points back to Descartes' belief that there exists an intangible soul beyond the physical body, which nevertheless has an impact on it. This Dennett rejects.

Searle also rejects dualism, though with other implications, which can be seen below:

*"Consciousness has a first-person ontology; neuronal processes have a third-person ontology. For that reason you cannot ontologically reduce the former to the latter. Consciousness is thus an aspect of the brain, the aspect that consists of ontologically subjective experiences. But there are not two different metaphysical realms in your skull, one 'physical' and one 'mental.' Rather, there are just processes going on in your brain and some of them are conscious experiences"* (Searle, 2004, s. 89)

Searle sets up another form of two-partitions, where consciousness is explicitly the first-person ontology, and the physical processes in the brain are third-person ontology; the physical processes can thus be observed from the outside, where consciousness can only be seen from the inside. This

is a marvelous mix of dualism and monism. Searle himself claims that he is neither a materialist nor a dualist, with the following arguments:

*"I say," Consciousness is just a brain process "(...), but what I mean is that consciousness as an irreducibly qualitative, subjective, first-personal, airy-fairy, and touchy-feely phenomenon is a process going on in the brain."* (Searle, 2004, s. 88)

Here he rejects the materialistic approach to consciousness, which states that consciousness as irreducibly qualitative, the subjective phenomenon does not exist, by claiming that they exist precisely as part of the brain.

*"I say, "Consciousness is irreducible to third-person neurobiological processes" (...) what I mean is that consciousness is causally reducible but not ontologically reducible. It is part of the ordinary physical world and is not something over and above it."* (Searle, 2004, s. 88)

Here he rejects classical Cartesian dualism, which states that the irreducibility of consciousness already suggests that consciousness is something above and beyond the neurological base. Thus, Searle's theory of consciousness exists in a borderland between materialism and dualism, where consciousness exists in the physical brain, but with a slight dualistic inclination, since it can only be accessed from the first person a phenomenological approach to it.

### *The Cartesian Theater*

If one is to reject dualism, the next step is to look at the monistic detachment. This so-called Cartesian materialism imagines a centralized place in the brain where "everything" is gathered. This is what Dennett calls the Cartesian Theater, and thus he uses a metaphor for where consciousness in this theory is located. This central center is one of the most enduring ideas of consciousness theory, which continues to appear in new iterations. One of the reasons this idea keeps coming back, Dennett says, is the naïve divide between "I" and "the outside world." When we feel that we cannot move an arm because it has become numb or paralyzed, the "self" becomes smaller, and the outside world penetrates us. Similarly, we would not expect to be able to see if our optic nerve was cut. The visual experience thus takes place somewhere between my eyes and my voice when / if I tell what I see. Somewhere between these two extremes, one should thus find the Cartesian Theater. The big mistake in theater theory is that a goal is suggested that sensory impressions must be achieved before the phenomenon is experienced, where, according to

Dennett, one begins to experience a phenomenon already when an image is inscribed on the eye. (Dennett, *Consciousness Explained*, 1991, s. 108)

This argument ultimately falls back on a homunculus argument in which the soul used to play the role of an individual observer of our experiences, and thereby a small man - a homunculus - separated from ourselves, but which nevertheless influenced our actions. A man who sits at the control center in the brain and sees what we see and controls how we move. This argument fails in that it creates an infinite regression since the little man must also have a small man, et cetera. If the regression is interrupted and thus ends in the last homunculus, you will be forced to explain how he understands and thinking, and so the problem has simply shifted.

### Implementation constraints of strong artificial intelligence

Of course, there are implementation constraints and problems that exist with a strong AI, which, among other things, Hubert L. Dreyfus puts forward. He is a critic of the theory of a powerful AI that is conscious and believes that we cannot put the theory into practice with digital computers since we have to use components that are sufficiently similar to human parts. This may be feasible, but it is not the basis of his criticism directed at digital information processing machines. (Dreyfus H. L., 1992, pp. 250-251)

### *Artificial Intelligence classifications*

First, it is necessary to explain two of the overall paradigms in AI research.

#### Classical artificial intelligence

Classical AI, also called symbolic AI, because it terms cognition as symbol manipulation. This paradigm is supported by researchers Allen Newell and Herbert Simon, who in 1976 proclaimed that symbol-recognizable computers at that time are capable of displaying intelligence in the form of general operations. (Chalmers, 1992, p. 7) Turing, as mentioned earlier in this thesis, is also behind classic AI. He created the foundation of the computer as it exists today with his theoretical Turing machine. The classical AI is subject to the same rules of calculation as Turing's original machine, which is why it is serially based.

Classical AI is syntactically based since the cognitive processes are syntactically generated sequences of symbols. A classical AI is bound by its serial computational method and fixed

solution models. Thus, because a classical AI has to be preprogrammed, it becomes completely deterministic, so that two machines, with the same programming, end up with the same answer to a given question. (Turing, On Computable Numbers, with an Application to the Entscheidungsproblem, 1936) In the process of getting knowledge disseminated to a classical AI, all input must be atomized because a classical AI is not learning, but all knowledge must be pre-programmed, which means that a classical AI has all its knowledge from its "birth." This causes a problem as a classical AI cannot handle situations that are not foreseen by the programmers and, therefore, is always static. Classical AI thus shoots itself in the foot, since, in order to exist in the world on equal terms with humans, it has to formalize all knowledge, which is an impossibility.

### Modern artificial intelligence

A modern AI is opposed to classical AI, a learning system that does not initially have any specific knowledge, but, like human intelligence, it must acquire it through experiences and experiences thereof. The modern AI is based on a network paradigm, since it uses parallel computation, unlike classical AI, which is serial. This allows for multiple simultaneous data processing where classical AI is locked into one computation at a time. The parallel data processing is done using a neural network. A neural network is a simulation of the human brain, which is a network of individual neurons, each of which connects with everyone else through several links. A neuron by itself has no greater effect, while the network of which a neuron is a member creates different states. A simple neuron carries no semantic knowledge in this paradigm, but in collaboration, the semantic understanding can arise. (Chalmers, 1992, p. 7)

In addition to being complex, the model behind the neural network is very effective in parallelizing tasks. Furthermore, Brunak and Lautrup add that: If there are too many processors, they cannot be brought together in a very hierarchical system. The hierarchical structure makes it challenging to construct an effective communication pattern that can be adapted to many different computational tasks. (Brunak & Lautrup, 1990, p. 82) That is, the neural network is not hierarchical, but is connected in parallel in a plane, increasing the computational speed.

### The biological remarks of Dreyfus

In the biological aspect, Dreyfus believes it is essential to point out that the brain does not consist solely of neurons. Therefore, it is not sufficient to make exact copies of each neuron in the brain to make a complete replacement from biological to mechanical parts of the brain. Even if you could



make this neuron replacement, there would still be chemical mixtures that affect the neurons, and in some cases, give off emotions and other conditions. (Dreyfus H. L., 1992, p. 160)

In the book *Mind over Machine*, Dreyfus and his brother Stuart E. Dreyfus write that three levels must be understood before it is possible to explain how something works. These three levels are; particle, component, and the level of function. These three levels are important to clarify to provide an understanding of how a mechanical or some biological being works. Each level is divided to show which parts create the machine. Levels are needed because they each describe their views on the organism or mechanism, which could not be covered by a single level for the whole.

- At the particle level, the fundamental physical contexts are described, and it is possible to determine which substance is involved. At the particle level, one cannot explain the functional properties of a machine, as this can only be deduced at a "higher" level.
- At the component level, you begin to describe the individual parts of a machine, and in a computer, this will be the individual transistors and circuits, and still at the same level processors and individual parts exist in the computer.
- The functional level that Dreyfus considers most important, in this context, is to explain how a device works. A functional approach to a car is relatively easy, as you can look at all the parts individually, like creating the performance of their holistic composition. When describing a computer, it immediately becomes more complicated; as Dreyfus calls, a virtual machine exists on the computer. In this virtual machine, there are parts of software that each perform its own part and, on the whole, create the function of the overall software. A computer that recognizes symbols cannot be divided by physical parts since some exist only virtually on the computer, and these simply perform logical operations internally in the machine. It is with this background that theorists of classical AI consider the brain to operate just like a computer, as it is a collaboration of the various components that gives a unified result. (Dreyfus & Dreyfus, 1986, pp. 61-62)

Looking at the brain with the three levels that the Dreyfus brothers produce, proponents of the classical AI are put to shame, as Dreyfus writes:

*"This Model is still uncritically accepted by practically everyone not directly involved with work in neurophysiology, and underlies the naive assumption that man is a walking example of a successful digital computer program." (Dreyfus H. L., 1992, p. 159)*

In the above, Dreyfus says it is directly wrong and naive to regard the brain as a digital data processor. Thus, only individuals who are not involved in neurophysiology can accept the brain as a digital machine. However, it should be mentioned that the brain also contains binary signals in the form of impulses to the nervous system. However, here Dreyfus mentions another theorist John von Neumann, who says that:

*"The neuron transmits an impulse. ... The nerve impulse seems in the main to be an all-or-none affair, comparable to a binary digit. This a digital element is evidently present, but it is equally evident that this is not the entire story.*

*... It is well known that there are various composite functional sequences in the organism which have to go through a variety of steps from the original stimulus to the ultimate effect- some of the steps being neural, that is, digital, and others humoral, that is, analog." (Dreyfus H. L., 1992, p. 160)*

Thus, Dreyfus points out through von Neumann that although these are purely binary signals, other things affect the actual signal, such as intervals between firing. The pulse rate is analogous as it is not regular. Thus, when the brain uses an analog system, it naturally follows that it is not the same as a digital machine. For Dreyfus, there is a doubt as to whether the brain processes information in the same way as a classical artificial intelligence since information can be distributed in several places in the brain. This is similar to what Dennett writes about consciousness; that the brain precisely distributes information to different parts of the brain, and precisely does not center the information in a single place in the brain of a Cartesian theater. (Dreyfus H. L., 1992, p. 160)

From my point of view, it seems like Dreyfu's attack on artificial intelligence from the biological aspect only affects the classic AI. The differences and shortcomings mentioned by Dreyfus exactly match the difference between classical and modern AI. One might be inclined to believe that with a full understanding of the network paradigm, Dreyfus would drop his criticism of artificial intelligence or at least dismiss some of those criticisms.

### The psychological remarks of Dreyfus

Dreyfus criticizes artificial intelligence from a psychological perspective where he insists that we humans have a view of the brain as an analogy to our latest inventions, and the computer is just the latest shot of this strain:

*"In the period between the invention of the telephone relay and its apotheosis in the digital computer, the brain, always understood in terms of the latest technological inventions, was understood as a large telephone switchboard or, more recently, as an electronic computer."*

(Dreyfus H. L., 1992, p. 159)

People are thus without any real understanding of the brain but are introduced to it as the latest technology in the market. Thus, a simplification of the brain is made, which, however, still becomes less simple than its predecessor. Therefore, the serial computer is simplified, as we do not yet have anything that works better by analogy. Through the criticism of this simplification, Dreyfus distances himself from the comparison between a digital computer and the human brain. Dreyfus himself is a critic of artificial intelligence and does not believe that it is possible to create artificial intelligence with the technology we have today, not only the data processing part is incomplete, but also some chemical mixtures are missing before it is possible to create an artificial intelligence. He thereby believes that there is no computable answer to all possible behaviors, which he explains in the following quote:

*"There is, indeed not the slightest justification for the claim that 'for each type of behavior in the repertoire of that organism, a putative answer to the question, How does one produce behavior of that type? takes form of a set of specific instructions for producing the behavior by performing a set of machine operations.'" (Dreyfus H. L., 1992, p. 167)*

Thus, Dreyfus says that behavior is not calculable. Since this is the case, artificial intelligence is doomed to fail as long as technology is stuck in this serial data processing. The argument about preprogramming here comes back to the surface, as Dreyfus does not believe that all possible behaviors can be programmed in advance. He thus thinks that the comparison between the digital computer and our analog brain is absurd, as the two function in their way.

The brain's unique processing of data is also evident in the way data is handled and stored. Where a digital machine will create a string of bits and store them in a unique location in its memory, an analog memory will add meaning to data, according to Dreyfus. An example of this is

by the word "mother," where a digital data processor will simply store the string binary as a long number of zeros and ones; an analog data processor will add opinions to the word, such as references to one's own mother, another's mothers, or an understanding the word mother, et cetera. By storing the word with meaning and understanding, there is thus a semantic approach to data. Semantics is one of the more persistent problems of artificial intelligence today since artificial intelligence cannot relate to the world around it. If artificial intelligence does not have a semantic understanding of the world, it will not be able to conduct a Turing test as it does not have the necessary knowledge of the world.

## Perspectives on Gender

The theoretical foundation can not only be created based on AI research. In order to understand how gender stereotypes influence AI, it is necessary to understand gender. This will unfold under the main topics: Gender as a Performative and Naturalized Gendered Understanding. Gender as a performative will be based on the American philosopher Judith Butler's work (2010), while Naturalized gendered understandings will be based on the work of the French sociologist, Pierre Bourdieu (2007).

### Gender as performative

The following section introduces the theoretical branch of feminism, queer feminism, and then presents philosopher and gender scientist Judith Butler's critique of feminism itself. In continuation of this, there will be a review of selected passages from Butler's work, *Gender Trouble*, from 1990 to lay down the theoretical framework for this thesis and how gender is viewed.

### *Queer feminism*

Judith Butler is considered a pioneer in the queer theoretical branch of feminism and gender research, and it is on this basis that Butler's authorship is put in the context of the research she contributes to. Judith Butler is considered the reigning queen of gender, referring to her pioneering work in queer feminism. (Stormhøj, 1999)

Queer feminism originated from standpoint feminism, which characterized gender research from the 1960s to the 1980s when 'diversity feminism' predominated. The academic "birth" of queer feminism dates back to around 1989-90, when several conferences took place in the United States on queer theory, while Butler published the work, *Gender Trouble* in 1990 (Rosenberg, 2007, p. 15).

Queer feminism has its roots in the 1970s United States, where the radical gay and lesbian movement fought for the right to be gay in private as well as the freedom to be public about one's sexuality (Rosenberg, 2007, p. 15). As an academic genre and activist movement, queer feminism targets criticism of heterocentric tendencies in mainstream feminism. The criticism is based on the argument that feminism's focus on heterosexual women's problems and interests implicitly affirms and reproduces the heteronormativity of society. This also contributes to further stigmatization of homosexuals and continued invisibility of lesbian relationships (Lykke, 2008, p. 113).

Throughout the 1990s, queer theory created a 'conflict' in the feminist environment. A large number of feminists feared that the queer theory would attract many of the newer feminists and end up hurting the women's struggle. According to Rosenberg, this conflict in which feminism's weak points consisted of exhibiting the then inability to embrace homosexuals, to which she by extension, asked;

*"Is feminism not an open and accessible position for everyone - regardless of gender?"* (Rosenberg, 2007, p. 17)

### *Butler's conflict with feminism*

Judith Butler addresses a sharp criticism of feminism's categorization of women as one category. With inspiration from Foucault's conceptions of power and sexuality research, Butler reviews many naturalized and fixed gender constructions. In the Preface to *Gender Trouble*, the purpose of the book is described as:

*"... to uncover the ways in which the very thinking of what is possible in a gendered life is prevented by certain habitual and violent assumptions"* (Butler, 2010)

This is applicable to the purpose of the thesis: to show the role of gendered understandings in the creation of artificial intelligences, and thereby to try to uncover whether gendered

understandings construct patterns of what is possible in AI. Based on the criticism of feminism's categorization of 'women,' Butler reviews several thinkers touching on sexuality, gender, and constructions, to which Beauvoir, Kristeva's, and Wittig are mentioned. The first criticism leveled at feminism, and past gender research is directed at the insufficiency of examining how women can be more fully represented in language and politics. On the other hand, a feminist critique must also include an understanding of how the category of 'women,' as a subject of feminism, is also produced and constrained by the power structures that one seeks to set free (Butler, 2010, p. 39).

Because gender cannot be understood alone but must always be understood from a variety of discursively constituted identities, it is not possible to work with gender as a single category. At the same time, it is impossible to separate gender from political and cultural intersections. These intersections cannot be excluded from the sex, as the sex is just created and reproduced by these intersections (Butler, 2010, p. 40). Based on the argument that gender is constructed and interwoven and therefore cannot say anything in general, Butler elaborates:

*"The problem is no less appealing to the category of women for 'strategic' reasons, because strategies always have meanings that exceed the goals, as they intend. "* (Butler, 2010, p. 42)

It is thus, according to Butler, no solution arguing that 'woman' is used solely as a strategy to understand and classify the world as these strategies have implications for how sex is perceived.

### *Gender Trouble*

From the criticism of feminism stems Butler's actual thesis in Gender Trouble, namely the idea that not only the social gender but also the biological sex can be considered to be discursively designed or intended (Butler, 2010, p. 45).

Butler argues that biological sex is constructed in the same way as social gender. This is done based on the idea that it is the social gender that constructs the biological. Because the social gender is a series of cultural meanings, as a gendered body assumes and therefore cannot be determined due to biological sex. This is because a cultural significance will depart from traditions and cultures, and therefore cannot be said to be a universal causality between social and biological sex. Butler elaborates thus: Taken to its logical limit, the distinction between biological sex and social gender suggests a radical discontinuity between gendered bodies and culturally constructed social genders. If we assume for a moment that binary sex is stable, it does

not follow that the construction of 'men' will only be attributed to male bodies or that 'women' will be interpreted as female bodies only (Butler, 2010, p. 44).

It is a widespread assumption that 'the social gender' is purely the social translation of the biological sex, a kind of picture of a biological sex. This should be extended so that social gender no longer covers:

*“the cultural inscription of importance on a predetermined biological sex (a legal opinion); social gender must also signify the very production apparatus through which biological sex can be established.”* (Butler, 2010, p. 46)

Thus, the very definition of social gender should be expanded to take into account how the social gender contributes to constructing the biological sex. It is, therefore, with the background of the constructive effect of the social gender that the background, in order to see the biological sex as constructed, is formed. Butler elaborates:

*“Social gender also includes the discursive/cultural means that produce and establish 'gendered nature' or 'natural gender' as 'pre-discursive,' i.e., before culture...”* (Butler, 2010, p. 46)

Thus, it is not only the speech of biological sex that is determined by the social gender but also the definition of biological sex as something non-constructed.

According to Butler, the link between social gender and biological sex is maintained by the notion of a binary gender system. By preserving this notion, there will always be a mimetic relationship between biological sex and social gender, which at the same time causes that social gender will always mirror a biological sex or be limited by it. (Butler, 2010, p. 45)

### Categorization, identity, and gender

As noted above, Butler's appeal to the project of feminism is that it categorizes women as a coherent group. It is a pervasive theme to point out the consequences that categorization can have and which, overall, is a danger in using the 'woman' category. Thus, maintaining the category as a coherent entity effectively denies the diversity of cultural, social, and political intersections that those affected by the category are subject to (Butler, 2010, p. 56).

Butler is interested in how the regulatory practices governing gender intervene with other understandable notions of identity. It is considered that the way "persons" are identified is not given by;

*"... logical or analytical features of a person status, but rather socially established and established norms of intelligibility" (Butler, 2010, p. 59)*

It is further argued that it is not the only gender that is constructed and regulated by several practices but also many other 'identities,' all of which are regulated by the same practices as gender.

In examining the concepts of coherence and continuity in gender expression, the practices of the opposite are also described: incoherence and discontinuity. When these emerge in an expression of identity, it is because they are created by the same laws that create causal relationships between biological sex, social gender, and sexual desire through sexual practices (Butler, 2010, p. 60). There are thus many regulatory practices that regulate both sexual expression and sexual desire. In this way, according to Butler, also:

*"Heterosexuality as a compulsory and naturalized institution..." (Butler, 2010, p. 68)*

This happens because heterosexuality demands and regulates gender as a binary relationship, separating a masculine concept from a feminine one. So it is a practice that creates heterosexuality as something natural, thereby creating and maintaining two genders (Butler, 2010, p. 68).

### *Performativity*

Butler defines performativity from a substance metaphysical discourse:

*"... gender, therefore, turns out to be performative - it constitutes the identity that it is supposedly. In this sense, gender is always a doer, though not a subject's doer, which can be said to exist prior to the act. " (Butler, 2010, p. 70)*

In this view, gender is thus a doer that reflects the identity of the subject but is also exposed, as this doer can also arise before the subject's action. Butler elaborates and explains that behind different expressions of gender is not actual gender identity, but that the expressions are not gendered until they are translated (Butler, 2010, p. 71). Thus, there is nothing peculiarly masculine or feminine in the intention behind an expression, but first in its execution and translation.

In today's gender research, there is little doubt that gender expressions can be constructed, but when Butler published *Gender Trouble* in 1990, as mentioned above, this was a different way of



looking at gender. In that light, in Gender Trouble, there are a number of defenses for gender constructs; for example, Butler mentions:

*"To claim that gender is constructed is not to claim that it is illusory or artificial, understood in a binary contradiction that puts it" real 'and' authentic 'to each other. " (Butler, 2010, p. 82)*

Constructions of gender must, therefore, not be seen as either real or authentic, but merely as expressions that only make sense when performed. How these terms are translated and understood as natural or unnatural, Butler explains by defining gender as a kind of natural being. (Butler, 2010, p. 82). That is, some expressions repeated through actions over time create naturalized gender expressions. In the thesis, this can be seen in relation to how some expressions of gender can change over time, because old expressions have broken down, but new ones have taken their place and then solidified again. However, there may be traced gender expression, which seems solidified time back but has not been broken, simply redefined.

### *Summary*

It has been accounted for how Judith Butler with Gender Trouble takes account of feminism's categorization of 'women' and on this background unfolds her theory of the biological sex as constructed on a par with the social gender. In this connection, we have also examined how different expressions of identity are perceived and regulated in their translation, and it is based on them that Butler's performativity has unfolded.

### *Naturalized gendered understandings*

The following section aims to clarify carefully selected perspectives from the French sociologist, Pierre Bourdieu's work, The Masculine Dominance, of 2007. This provides the basis for elucidating several theoretical considerations on the mechanisms responsible for natural and immortalized structures. In what Bourdieu refers to as the gender divide. Thus, further in this thesis, it becomes possible to reflect on whether stereotypes in VPAs are conditional and conditioned by gendered understandings such as a naturalized arbitrariness.

### *The masculine dominance and its natural arbitrariness*

Initially, in The Masculine Dominance (2007), Bourdieu explains the immediate basis for the piece:

*"I have always been astonished by what might be called the paradox of doxa – the fact that the order of the world as we find it, with its one-way streets and its no-entry signs, whether literal or figurative, its obligations and its penalties, is broadly respected; that there are not more transgressions and subversions... and that the most intolerable conditions of existence can so often be perceived as acceptable and even natural."* (Bourdieu, 2007, p. 7)

By extension, Bourdieu explains that it is precisely in the way in which the masculine domination is imposed and endured that these 'intolerable conditions of existence' can be seen as the example of excellence, which is defined as a:

*"... effect of what I call symbolic violence..."* (Bourdieu, 2007, p. 8)

According to Bourdieu, this symbolic violence is both invisible and imperceptible violence perpetrated through the symbolic avenues of communication and recognition for the sake of malice, recognition, and emotion. Furthermore, it is explained that dominance is exercised in the name of a symbolic principle known and recognized by both the dominant as well as the dominated. It is a language and a way of life - a way of speaking, acting, and thinking. On this basis, Bourdieu points out the need to analyze the processes responsible for:

*"... that history is transformed into culture, cultural arbitrariness into naturalness."* (Bourdieu, 2007, p. 8)

It is thus the masculine dominance and its inherent arbitrariness that is illustrated by Bourdieu through an analysis of the Kabylie society, which is built on 'the androcentric principle.' The analysis can then be treated as *"an objective archeology of our unconscious..."* and thus settle the naturalized asymmetry between the sexes (Bourdieu, 2007, pp. 8-9).

For an understanding of Bourdieu's work, it is crucial to becoming aware of one's basic understanding of gender in order to be able to put it into a context of gender stereotypes in VPAs. Bourdieu explains:

*"The biological appearance and the very real effects that have been produced in bodies and mind by a long collective labor of socialization of the biological and biologicization of the social combine to reverse the relationship between causes and effects and to make naturalized social constructions ('genders' as sexually characterized habitus) appear as the grounding in nature of the arbitrary division which underlies both reality and the representation of reality..."* (Bourdieu, 2007, p. 10)

Thus, in Bourdieu's understanding of gender, two perspectives can be traced to this: a biological sex is seen by external appearance - i.e., the anatomical differences - and a socially constructed gender, which is a historically created phenomenon. To this end, he points out that, based on the historical processes that have been instrumental in socializing the biological and the biologicalizing of the social, a naturalized social construction of the sexes has taken place - what it refers to as gendered forms of habitus.

According to Bourdieu, the primary focus areas for this, in order to examine the unchangeable sizes of the gender relations, must be the historical mechanisms as well as the institutions that have consistently *"pulled these unchanging sizes out of history"* (Bourdieu, 2007, p. 11). Instead of focusing on institutions such as the home, which is seen in earlier feminist research, there should instead be a focus on the school or state as it is through these institutions that the very principles of domination are developed and enforced and, as a result, practiced in the private (Bourdieu, 2007, p. 11).

### *The division between genders in an enlarged view*

One of the more basic premises for Bourdieu's study of masculine domination is to make himself aware that he does not fall into the same modes of thinking that result from domination. Instead, he calls for a practical approach by attempting to 'objectify the subject in scientific objectification.' (Bourdieu, 2007, p. 12). From this, Bourdieu is thus based on the Berber community in Kabylia in North Africa. He explains how gender differences in the Barbary community in Kabylia are understood as part of all the contradictions that organize the cosmos, to which the significance of these is naturalized.

Furthermore, it is described that the contradiction between the masculine and feminine divides things and activities and finds its objective and subjective necessity by entering into a system of homologous contradictions such as high/low, front/back, et cetera. (Bourdieu, 2007, p. 15). It is in line with this understanding that it is important to note how these contradictions form part of thought scheme – schemes that register deviations and special features as natural differences. These are thus objectivized, which contributes to their existence and further naturalized by being part of such a system of differences, which is thus perceived as equally natural (Bourdieu, 2007, p. 15).

### *The incorporation of dominance and the symbolic violence*

According to Bourdieu, the masculine order's strength is that it does not need justification, as it is explained that the 'androcentric' view is considered neutral and thus does not need to be legitimized (Bourdieu, 2007, p. 17). Further, the strength can be seen by legitimizing the relationship of dominance - between men and women - by inscribing it into a biological nature, which at the same time is itself a naturalized social construct (Bourdieu, 2007, p. 34). It is by extension that the existence of the genders must be seen as being relational, as both are understood as the result of both a theoretical and a practical construct which is intended to distinguish them to produce them as socially differentiated bodies - a reflection of the opposite gender. Bourdieu explains this as a habitus, that is virile and thus non-feminine, or feminine and thus non-masculine (Bourdieu, 2007, p. 35). It is based on this that the genders are seen as a pair of contradictions that are continuously measured in relation to each other - feminine versus masculine. This division between the genders contributes to the constitution of the social order. Thus, the relational relationship of genders must be understood as being the basic principle of classification of things and practices that can be reduced to the contradiction between the masculine and the feminine. It is from this view that today's women who try to free themselves from traditional norms and instead seek to create their approach to the body always remain subordinate to the masculine point of view (Bourdieu, 2007, p. 42).

In light of the above, it should be noted here whether the dominance structures function as a result of ongoing reproduction work, supported by both single agents and institutions, families, the church, the school, and the state (Bourdieu, 2007, p. 48). Understanding this work of reproduction may thus help to explain why some of the more traditional gendered understandings in the heteronormative society are experienced as constant - or rather unchanged throughout history. It is by extension that the symbolic violence that is fundamental to understanding Bourdieu's work on the relationship of dominance can explain how dominance appears natural to both the dominant and the dominated. This symbolic violence can be explained by the dominant joining the dominance as the schemas the dominant sets in order to perceive and evaluate themselves, or to discover and evaluate the dominant contradictions (high/low, masculine/feminine, white/black, et cetera) is the result of the incorporation of the thus-naturalized classifications, the dominated being the social being (Bourdieu, 2007, p. 49).

This, in turn, can map how the dominant contradictions are the product of the so-called naturalized classifications that the dominated party is influenced and a result of. From this, it becomes explicit that the dominated only has recognition tools that are shared with the dominant (Bourdieu, 2007, p. 49), which is why it is again expressed that the sexes exist in a mutually contradictory relationship. For Bourdieu, however, a consciousness of the dominance relationship is not enough to free oneself:

*"It is utterly illusory to believe that symbolic violence can be defeated only by the weapons of consciousness and will, for its effects and the conditions for its efficacy, are permanently inscribed in the innermost body of the body in the form of dispositions."* (Bourdieu, 2007, p. 54)

This is to be seen from the fact that symbolic violence does not exist in unenlightened consciousnesses, but instead exists in 'dispositions' that are organized into the domination structures which they are a result of. Only hope can be made for liberation by a radical change in the social conditions of production for the dispositions on which the dominated take on the view of the dominant on both the dominant and also on themselves (Bourdieu, 2007, p. 57).

### *Persistence and change*

As pointed out earlier in this theoretical section, in this thesis, there is a wonder of how freezing of divided gender understandings can last through time. Bourdieu calls it the result of historical work to perpetuate (Bourdieu, 2007, p. 107). To overcome these persistent and unchanging dimensions, one must attempt to analyze the ever-repeated social (re) construction of the principles of appearance and division which produce the 'sexes' and, in a broader sense, the various categories of sexual practices (heterosexuals and homosexuals in particular) (Bourdieu, 2007, p. 109). Here, it is important to add that Bourdieu views heterosexuality as socially constructed and socially constituted as being a universal measure for any sexual practice perceived as usual (Bourdieu, 2007, p. 109).

In conclusion, Bourdieu's reflections on the changes in the masculine dominance that have occurred over time are brought to light, which has emerged, especially in light of the critical work of the feminist movement. To this, Bourdieu describes that the most

fundamental change is seen by the fact that masculine dominance is no longer imposed as a matter of course. This is explained precisely as a result of the feminists' focus on the domination relationship, which has contributed to breaking the ordinary self-reinforcing circle so that today's

masculine dominance appears as something to be defended and justified or even something that one must defend or justify (Bourdieu, 2007, p. 114).

### *Summary*

Through the above, a characteristic of Pierre Bourdieu's *The Masculine Dominance* (2007) has been presented, and through this, the gendered division. From this, it has been possible to present his understanding of gender, which is viewed from two perspectives: a biological gender and a socially constructed gender. In continuation of this, it is explained how, based on historical processes, there has been a naturalized social construction of the sexes - thus gendered forms of habitus. Furthermore, the existence of the genders is described as being relational. The genders are seen as opposite pairs, which are always measured in relation to each other.

Bourdieu further deals with the fact that the dominance structures are consistently in time due to repetitive reproduction work, supported by both agents and institutions. In continuation of this, the continuing relationship of domination is explained by the symbolic violence, which is understood as invisible and imperceptible violence that is both known and recognized by the dominant as well as the dominated. It is thus based on Bourdieu's understanding of gender and including their relational coexistence - the gender divide - as well as the inherent arbitrariness of the domination relationship, that this thesis will unfold various analytical perspectives aimed at elucidating how gendered understandings are conditioned by such understanding of the naturalized.

### *Reflections on the interaction between Butler and Bourdieu*

This section will reflect on the interaction between the use of Judith Butler and Pierre Bourdieu's conceptual apparatus, which is explained by comparisons of their views in the works used to create an awareness of similarities and disagreements among them. As mentioned, Butler and Bourdieu's works are used to elucidate different aspects of gendering addition of the understanding of artificial intelligence, which is why it is important to understand that they are not equated with supporting the same analytical points, but that they must function as a whole that together should help to create a common foundation for understanding the subject field.

The starting point for Bourdieu's work must be seen from his wonder at how some of the most intolerable conditions of existence - the masculine dominance - often appear acceptable or even

natural. In continuation of this, Butler also has a fundamental focus on reviewing a number of the naturalized and trapped gender constructs, and to uncover the limitations of the violent and habitual assumptions about the opportunities in a sexed life. Thus, their intentions emerge from the same point of view: to focus and present how intolerable conditions of existence appear to be naturalized, or, in Butler's terms, to uncover naturalized and fixed gender constructs.

By extension, it is crucial to understand that Bourdieu's work is written as a sociological, empirically founded study based on the Berber community in Kabylia in North Africa, where the gender differences - the contradiction between the masculine and the feminine - are understood as part of the contradictions that organize the cosmos and thus make it means natural. However, this is where Butler's aim may differ from Bourdieu's, as she, through a philosophical approach, argues the critical aspect of working from a categorization of women as one category precisely, because a woman cannot be used solely as a strategy for understanding and dividing the world because these strategies have implications for the way gender is perceived. In this connection, it is urgent to mention that Bourdieu's argument for starting from the gender differences must be seen in his point that an examination of these must not end in even the same ways of thinking that result from domination, which is why he finds it is crucial to objectify the subject in scientific objectification.

In the preface to the masculine domination, Bourdieu explicitly criticizes Butler for her work feeding too much compared to a more modest and uncertain yield (Bourdieu, 2007). Instead, Bourdieu calls for the invention and coercion of collective forms of organization and action and effective means of combat (including symbolic) that will be able to shake off the state and legal institutions that help perpetuate their subordination (Bourdieu, 2007). This must be seen from an argument that it is not enough just to be aware of the dominance relationship between men and women, but that it is instead necessary to settle the social conditions of production of the dispositions underlying for both the dominant and the dominant view of themselves. However, it should be mentioned in this connection that Butler seeks to establish that gender cannot be separated from political and cultural intersections since gender is precisely created and reproduced by these intersections.

Bourdieu understands gender from two perspectives: first, a biological gender seen by outward appearance, and partly a socially constructed gender that is a historically created phenomenon.

In continuation of this presentation, Bourdieu views the historical processes as contributing to socializing the biological and biologicalizing of the social, which has created a naturalized social construction of the genders. Butler works based on a similar view that not only is the social gender discursively constructed, but that the biological sex is also. This is because it is the social gender that constructs the biological. To this end, it is explicit that the social gender is just seen as having a number of cultural meanings that a gendered body assumes, which is why a social gender cannot be a consequence of a biological sex.

Both Butler and Bourdieu, in their works, present perspectives on heterosexual practice as helping to maintain a gendered divide. Butler describes how heterosexuality demands and regulates gender as a binary relationship, separating a masculine concept from a feminine one. It is on this background that she refers to it as a practice that results in creating something natural from which two genders are created and maintained. For Bourdieu, the existence of the genders can also be seen as relational, because they are both a theoretical as well as a useful construct that is precisely aimed at distinguishing between them. It is on this background that there is talk of socially differentiated bodies as a reflection of the opposite sex. By extension, Bourdieu views heterosexuality as equally socially constructed and socially constituted by being a universal measure for any sexual practice perceived as normal.

Finally, my critical reflections on both Butler and Bourdieu's understanding of emancipation and opposition to dominance or gendered compulsive conceptions must be mentioned. Both of them have a relatively limiting aspect in their work that may seem demotivating to the reader for a possible emancipatory aim of dealing with these intolerable conditions of existence. In Butler's work, this is seen through the understanding of solidified gender expressions: Gender is the repetitive stylization of the body, a set of repetitive actions within a very rigid regulatory framework that over time solidifies and produces an apparent substance that sets the 'real' and 'authentic' to one another. (Butler 2010: 82). This view seems very limiting to the individual's ability to act in order to release the compulsive notions of how to be able to cope with something that, over time, solidifies and thus is perceived as something real and authentic? To this end, Bourdieu's work has a similar limitation, as this highlights the importance of gender relations in being the basic principle of classification of things and practices, to which Bourdieu states that women whom today seek to abide by traditional norms, based on the principle of classification,



always will be inferior to the masculine point of view. This inevitably creates a feeling in the women that the struggle to cope with masculine dominance is lost in advance.

Thus, in the above, a number of reflections on the interaction between Bourdieu and Butler have been reviewed in the present thesis. This has been done based on a number of theoretical perspectives presented through this chapter in order to explain from here how these two differ from each other's perspectives, but also where they approximately share the same optics. This section's justification must be found in the fact that Butler and Bourdieu's work will be used to look at different aspects of the area of research, but will also play a role in the analysis of gendered understandings in stereotypical female portrayals in artificial intelligence, which is why it is necessary to relate to this interaction.

## Analysis Strategy

The following chapter presents and explains the methodological reflections and choices that underlie the analytical strategy in this thesis. Initially, a presentation of the methods for the processing of the data material follows from three focus group interviews. Next, the analytical approach, deconstruction, which serves as the overall aim of the analysis, is mapped, under which I use various analysis concepts: positioning and cultural recognition in order to make and support the deconstruction of the analyzes.

## Data processing

The following two sections explain the methods, meaning condensation, and long-table approach that constitute the method of processing the data material. Sentence condensation is used as a method to organize the audio files in writing, where the long-table approach is the concrete tool for organizing the written data material. After performing these two methods, the focus group material is ready for analysis.

## Meaning condensation

In this thesis, the condensation of sentences must take the place of transcribing the audio files. The opinion content is concentrated from the interviews and presented briefly after that. Kvale & Brinkmann (2009) writes:

*"Condensation of meaning implies that the opinions expressed by the interviewees are given a shorter wording. Long statements are summarized into shorter statements where the main meaning of what has been said is reworded in a few words. "* (Kvale & Brinkmann, 2009, p. 227)

Thus, this method aims to summarize the interviewees' statements by formulating them in shorter terms and finally summarizing the informants' opinions and statements. To this end, I intend to address the complexity of the multifaceted attitudes expressed in all three focus group interviews, which is why the summary of the partly explicit and implicit attitudes also contains both disagreements and agreements among the informants. The process of designing a significant condensation of the data material consists of three steps: in the first step, the entire interview is listened to get an overall impression. Next, the interview is listened to again to formulate the

natural meaning units expressed by the informants along the way. The third and final step is to rephrase the theme (s) that dominate a fundamental unit of meaning so that these themes are communicated based on our understandings as researchers but in clear accordance with the views of the informants (Kvale & Brinkmann, 2009, p. 228).

The reason for the choice of meaning condensation must thus be seen from the method of this method to analyze the extensive and very complex data material that I collected during the three focus group interviews, by looking for the natural meaning units and then presenting their main themes. After that, it will be possible from here to make these themes as well as opinion units the subject of the thesis.

### Long-table approach

In the actual processing of the data from the three focus group interviews, the method: a long-table approach was used in relation to creating an overview of the large data material. The method is a proven and effective method of dividing large amounts of data into smaller and more reasonable sizes (Krueger & Casey, 2000, p. 132). This approach to processing focus group interviews also allows them to be divided into thematic already in the processing of the data material. Since in this thesis, I have worked with condensations of meaning instead of the more traditional transcription, part of the thematization concerning categorization has already taken place before processing. Therefore, based on the form of the data material, this long-table approach has been modified to fit condensation and not transcription.

When processing, the condensations of meaning were printed out and then divided into different blocks of meaning or themes. Since, in this thesis, three focus groups have been held, it is crucial to separate the different statements from the focus groups for further treatment. After identifying themes, they must be sorted into a number of different rounds, which will make the sorting more adequate and more acceptable. This is done by thematizing across the focus groups so that statements are mixed in overall thematics, which is especially useful for the purpose of conducting further comparative analysis. Also, this approach is advantageous when the focus group interviews are conducted from the same structure as it is done in the present thesis, using the same question guide in all interviews.

## Analytical approach

The purpose of this section is to map the thesis's analytical approach, deconstruction, which is seen as the framework and aim of the analysis but equally aimed at the thesis as a whole. It is thus the starting point that deconstruction works as an approach to gain insight into the gendered understandings that are conditioned and conditioned by virtual personal assistants.

## Deconstruction

In continuation of the poststructuralist framework of this thesis, the analytical approach to deconstruction is used to deconstruct informants' understanding of gender in relation to technology and from this to be able to construct a new understanding (Kvale & Brinkmann, 2009, p. 255). Against this background, the origins of deconstruction will be explained initially, to which the analytical approach is presented to explain how the present study is working to deconstruct the data material with informants' statements and attitudes about virtual personal assistants.

### *The Origin of Deconstruction - Jacques Derrida*

When deconstructivist optics is to be understood, one must start from the post-structuralist French philosopher Jacques Derrida as the founding deconstructionist. Derrida argues in writings from the 1960s that speech has been privileged over scripture on the basis of a view of scripture as being dangerous, depraved, or disobedient (Wæver, 2010, p. 214).

According to Derrida, the general strategy for deconstruction is to identify binary opposites from which to try to dissolve the text and subsequently reconstruct what is already contained by meanings (Görlich & Kirkegaard, 1999, p. 206). The procedure for this is initially to illustrate how a seemingly symmetrical contradiction is, in fact, a hierarchy, and it is reversed so that the child category is privileged (Wæver, 2010, p. 214). An example of this is conceptual certainty/uncertainty, where certainty is typically regarded as the primary concept since uncertainty is simply the absence of certainty. However, this can be reversed so that uncertainty is considered to be the primary concept because the concerns of uncertainty automatically make certainty relevant (Wæver, 2010, p. 214). After turning the conceptual couple around, the notion of the complete contradiction progresses because of the joint operation that is the prerequisite for both of them (Wæver, 2010, p. 214). It is thus the latent contradictions - for example, male and female - that are the primary focus of deconstruction. Furthermore, it is explained that the

experience of these distinctions is considered to be natural and self-evident in culture and that in the scientific application, they have been regarded as a couple, one being superior to the other (Görlich & Kirkegaard, 1999, p. 206).

Derrida goes on to explain that he wants to change the hierarchy between writing and speech so that writing is considered something that comes before the speech - that is, absence comes before presence. This is further elaborated: Instead of seeing meaning as something that has an anchor point and final authority (speech), we must recognize that meaning is a perpetually dynamic magnitude open to many interpretations and uses (writing). Meaning is a phenomenon that will never be fixed, and the experienced, fixed meaning found in the speech is thus a particular variant of a more fundamentally uncontrollable meaning (Wæver, 2010, p. 215). It is therefore understood that the most fundamental aim is to make differences and, on the basis of this, to make sense, thereby contesting the very contradiction of speech/writing and thus not just reversing it. Derrida states that there is nothing outside the text (Wæver, 2010, p. 215). This is explained based on the adage that there is no privileged point for the text - text is understood as the total production of opinions that shape our world - where one can stand and watch the games of the meaning from the outside. It is on this basis that there is nothing that precedes the discourse since everything is just given its meaning in the text and, therefore, not before the text (Wæver, 2010, p. 216).

It can, therefore, be explained from the above that deconstruction can be seen as a combination of both destruction and construction, where deconstruction involves the destruction of one understanding of a text and from this opens up construction and other and new understandings (Kvale & Brinkmann, 2009, p. 255). Based on this, bridges can be built to explain the purpose of using deconstruction in the analyzes for the present thesis.

### *Making the known unknown*

Based on the presentation of Derrida and his work, the use of deconstruction in this thesis will be presented. As the subject of the thesis is female gender stereotypes in virtual personal assistants, there is thus an implicit focus on the category of gender and its naturalized status in artificial intelligence. On this background is the relevance of using deconstruction, which encourages reflection concerning precisely the categories taken for granted - partly the historical as well as the cultural constructions and categories (Görlich & Kirkegaard, 1999, p. 206). In order to create

this reflection, deconstruction initially seeks to visualize how these categories are lived and passed on to individuals - without further reflection on this - where the second instance is then allowed to take up the categories for revision and reflection. Thus, through the deconstruction of gendered understandings, it becomes possible for us to offer new understandings and interpretations of female gender stereotypes in virtual personal assistants that may ultimately be instrumental in bringing about change. In other words, we use deconstruction as an analytical approach to making the known unknown (Søndergaard, 2006, p. 56; Görlich & Kirkegaard, 1999, p. 207)

However, Søndergaard points out the need to be aware that such new interpretations or understandings must be disseminated in a culture that already knows the phenomena in one way, which is why we need to find a balance to accommodate any provocation: Since the analysis must be disseminated into a culture whose actors must be able to understand the proposals and find them plausible and interesting in relation to what is already known, proposals for understanding must precisely position themselves so that they balance somewhere between, on the one hand, could be accepted within the known without otherwise coinciding with the known. If the latter is the case, the research results will be of limited value (Søndergaard, 2006, p. 59).

Concerning the deconstruction process itself, Kvale & Brinkmann propose to focus on selected interview passages and expressions and, based on this, produce the meanings expressed by the informants during the focus group interviews, while focusing on the meanings that are hidden and excluded by the chosen words (Kvale & Brinkmann, 2009, p. 255). Furthermore, it is explained that there are no specific requirements for the method. However, that one can choose to focus on the use of critical concepts in different contexts - what I interpret here as conversation topics - from many perspectives and thus provide a multifaceted material for deconstruction.

It should be mentioned, however, that deconstruction in this thesis will be used with the knowledge that with this analytical approach, I can end up presenting a reality that suffers from forms of cultural blindness and self-denial that are based on my understandings as a researcher. This blindness can also occur in the method of condensation of meaning and the whole processing of the focus group interviews since one can, without any intention, overlook important information that could have elucidated more concrete topics. However, with deconstruction, as

with so many other analytical approaches, there is a danger of overlooking topics and clues in the analysis of a material, but it is part of the considerations in the use of deconstruction.

It has thus been explained how deconstruction is viewed and used in the analysis parts of this thesis and, at the same time, that the result of this must allow me to go beyond the very concrete phenomenon to a technological-cultural conditional level (Görlich & Kirkegaard, 1999, p. 207).

### Analytic levers

The present section maps out the analysis approaches used in the analysis to generate points from the focus group interviews, all of which should contribute to the study of the subject field. These analysis approaches will primarily be used in the first part of the analysis and consist of positioning, culturally recognizable & performativity. Thus, these seizures must be viewed as contributing to being able to make the aforementioned deconstruction and make the known stranger.

### Cultural awareness

In this thesis, the concept of culture is defined by the culture that surrounds gender in relation to technology and is, at the same time, limited to the understanding of technology that has been framed by me based on the selection criteria of the informants. Also, the informants are regarded as representatives of their subculture, consisting of their networks. Thus, their individual expressions, statements, and attitudes must be considered as characteristics of the normative basis that exists internally within their subculture. However, attention should be paid to the lack of knowledge about these networks, which I, as a researcher, have not been given in advance, but which I am partially presented with through the informants' narratives in the focus group interviews, and from which it becomes possible to gain an insight into the normative basis of the individual informant's subculture.

Throughout the study, I work with a dynamic and thus non-static cultural understanding in order to be able to see expressions as part of a continuous negotiation. It is with this in mind that a term such as cultural codes is not used, as these may appear as static codes in an eternally changeable culture.

## Positions

The positioning approach is seen as a tool for examining how informants position themselves internally in the focus groups in relation to each other's statements and attitudes. This is because I use the long-table approach to analyze across the focus groups and, on this basis, lack knowledge about how they position themselves in relation to each other. By using the positioning approach, I thus have the opportunity to compare these analysis results, and from this gain an insight into how the compositions of the focus groups influence the statements expressed during the interviews.

## Positioning theory

Positioning theory has traditionally focused on a concept of the role that could be used in the analysis of positions in, for example, a subculture. This traditional approach focused more on static aspects, which is why this approach helped to reproduce these. The positioning theory today has evolved to focus to a much greater extent on dynamic aspects of relationships and, therefore, not to maintain static elements in position analysis in the same way (Görlich & Kirkegaard, 1999, p. 42). The dynamic aspect of positioning theory emerges in focus on the position an actor occupies in conversation and the history underlying the expression of that conversation. Therefore, recent positioning theory focuses on how a position is composed of a wide range of discourses and positions in different contexts. A given position is understood as an expression of five stages. It can, therefore, be divided into five stages, which are about learning social categories, learning discursive practices, positioning per a given social category, recognizing characteristics, historical continuity, and unity. Common to the above five phases is that the individual needs to identify with one social category and not another so that one position is visible from the absence of another. However, an individual falls into different social categories according to the relational context, and it is in this element that dynamic and not static are included in positioning theory. Positioning theory is context-focused in that a position is an expression of the context it emerges, but also an expression of the actor's history and conclusion in other positions.



### *Applying positioning theory to focus groups*

Positioning theory is used in many contexts to analyze changes in positions over a longer continuous period. However, positioning theory is also useful for analyzing positions in focus groups, which, despite its short duration, can still be analyzed based on positions. Bente Halkier (2009) describes precisely how, in a research project, she used positioning theory in the analysis of focus group interviews. The knowledge interest in Halkier's project was how normativity is expressed in practice, and this interest is close to the knowledge interest in this thesis, namely to show what gendered understandings are expressed in conversations about virtual personal assistants. Thus, positioning theory will be used to see different positions in the conversation about gender and technology internally in the three focus groups held (Halkier, 2009, p. 99). According to Halkier, there are a wide variety of ways to view positioning processes in focus group interviews, but gives three examples: self-positioning, second positioning, and positioning for legitimization. Self-positioning describes how an informant in the focus group speaks either from previous normative discussions and from this, they use it to describe themselves as types.

A typical example might be where an informant says, *"I see myself as one who..."* (Halkier, 2009, p. 101). A second positioning is shown by the fact that others position one of the informants, which is also often done based on types. This can mostly occur in groups where the informants know each other, but also in focus groups where the informants do not have a relationship in advance. In the latter case, it is often the case that the second positioning is based on statements from other informants, where one is based on this, and therefore positions himself, but also the other. Furthermore, this kind of positioning appears less explicit than the former, since it is usually a normative understanding of another (Halkier, 2009, p. 101). Positioning for legitimization is a form of positioning that starts with a number of self-positions, which through the focus group, and the dialogue creates a form of the legitimacy of the statement (Halkier, 2009, p. 102).

### **Cultural recognition**

In the work with the focus groups, some cultural references have emerged from the informants. These references can have direct references to the culture within the use of VPAs and thus become a tool used by informants to legitimize their presence in a culture. This can be

exemplified by the informants talking about the VPA Siri, whether it is mentioned as a piece of technology used or not. Siri is seen as a direct cultural reference - a way of becoming culturally recognizable and accepted within the culture. This can be exemplified by when the informants talk about Siri, whether or not it is referred to as a VPA. Siri is seen as a direct cultural reference - a way of becoming culturally recognizable and accepted within the culture. Another example of a way to make themselves culturally recognizable is when Julie from the mixed focus group says:

*"... you are exactly a woman if you like white wine and like makeup, etc. But what about all of us who like to look homeless and do not bother with makeup?" (Appendix 7)*

This statement is a way for Julie to become culturally recognizable and can be seen as an expression of which references are acceptable in Julie's own network - that is, her own subculture.

The concepts of cultural recognition and positioning are thus used as analytical concepts to look behind statements and put them in a larger context so that statements are not only understood from their presentation but are perceived and analyzed as expressions of a cultural understanding.

## Analyzes

### Virtual personal assistants, artificial intelligence, expectations & emotions

The purpose of this analysis is to shed light on informants' characteristics of stereotypes in VPAs, and from this to frame informants' attitudes and statements about their perceived "relation" to technology and gender. This will be done based on various sub-themes, all of which must help to create an understanding of the terms, behaviors, and attitudes that influence the understanding of the female gender at a time when technology is having a more significant impact on the reality we are part of, but also influenced by, the informants expressed self-explanations in the relationship between gender and technology.

### A stereotype is...

All informants were somewhat in agreement on what makes up a stereotype. To take an example, Camilla from the female group describes a stereotype as:

*"A collective decision about how a group of individuals with similar characteristics behaves or is expected to behave"* (Appendix 5)

Some disagreement arises when trying to define whether or not a stereotype is a negative or positive connotation. In the mixed group Mads framed it like this:

*"I don't always think stereotypes are negative, but on the other hand, I also think that when you have stereotypes put up around people, it can also be problematic as if you put a mindset onto people and then it can become difficult to change points of view because you have already decided that a person is probably like this and it can probably cause problems ... However, if you do not in the same way, I know well you cannot help it ... I think it limits how accommodating you can be to specific people and such."* (Appendix 7)

On the one hand, Mads is not sure if he would consider stereotypes to be negative in all aspects. However, he goes on to mention apparent problems that occur when people are judged on predefined conditions, which goes to show how complex the issue is.

In the male group, a discussion arose around the male stereotype of having to pay on a date, which most members agreed should be considered a positive connotation, since it touches upon what they describe as a “gentleman” something Peter would be sad to see go:

*“I do not know if I am the one who is just conservative and think that it is a custom that men should pay on the first date, etc. I just think it is good manners, I know it may be in a stereotype, but somehow, I may also be afraid of letting go of the gentleman, it seems like something you should take care of getting rid of, but maybe it is also a stereotype that a man should be a gentleman. It would be a pity if it disappeared, it behooves men to behave a little properly”*

(Appendix 6)

On the other hand, all there seems to be an agreement on an understanding of stereotypes being mostly experienced negatively. Maybe not surprising the members of the female group was most vocal on the issue regarding female stereotypes and equality as Camilla puts it:

*“Women can easily project helplessness. I find it tremendously provocative when someone consciously or unconsciously behaves according to this stereotype, because it is unfortunate, in comparison to all issues of gender equality. After all, if you have a group that just has a built-in quality or you have a view of some ingrained helplessness, then, it is clear that those who feel better than this group, or can help this group, cannot perceive the group as equal.”* (Appendix 5)

However, it is essential to emphasize that Camilla later points out in the conversation with the other informants that she also thinks it interesting how binary the discussion gets. Although the male group is slightly more disconcerting about whether stereotypes should be considered damaging, Michael stood out by insisting on his belief that stereotypes should be considered harmful, regardless of how they manifest themselves in positive form, for which he says:

*“To me, a stereotype is still associated with being prejudiced, generalizing. Ehm and what to say, put people in a box without them not necessarily belong to it, again it is in a historical perspective, but it also happens today”* (Appendix 6)

The discussions show, as I have mentioned before, how complex and to some degree “touchy” the topic is. Despite this, the focus groups show that both men and women believe that the female characteristics are generally more desirable and positive if possessed by women, and those male characteristics are more desirable if possessed by men. This feeds into both theories by Butler

and Bourdieu in the sense that the historical power structures that exist in society help to maintain the gender or genders in particular constructions where the characteristics are viewed more favorably in the context in which we expect it.

### Women are emotional, and men are direct...

In addition to defining female stereotypes from external forms of expression, informants also discussed femininity based on values and characteristics. In the women's group, Annemette mentioned that feminine traits, for her, are seen, among other things, by being caring, and linking this to being maternal. In the mixed group, femininity is also characterized by the characteristics, caring and sensitive, where Linnea added that values are perceived as something very soft and can, therefore, quickly seem feminine. On this background, it can be considered whether Linnea speaks into a contradiction between the soft as being the feminine and the hard as attributed to the masculine.

Another interesting view from the interviews is the different interpretations men and women have of the VPAs. In the discussions by the male group, the thought and typical stereotype of women being better at understanding emotions and thinking feelings into the way VPAs interact with the user came up a couple of times. Frederik elaborated on this aspect:

*“Women probably have a greater tendency to put feelings on things that should not have feelings, while men might just see it as a machine ... It probably fits very well that women tend to give the VPA feelings that are not there. They probably understand emotions a little better than men. I think that can also be transferred to the technology we surround ourselves with besides VPAs”*  
(Appendix 6)

In the opposite group of females, the discussion was quite alike, but with an emphasis on the tendencies or stereotypes associated with men and their interaction with inanimate objects, or as Clara puts it:

*“There is an episode of The Big Bang Theory where Raj falls in love with Siri; it shows that a perfect relationship is straightforward and where the woman does as is said and is always available. It shows that there is no resistance. It is very dominating, the way you ask for something from a VPA”* (Appendix 5)

Clara taps into what has been presented in the theoretical section as the masculine dominance, which becomes inherently clear in the interaction that happens between the user and the VPA. Nevertheless, Clara also touches upon typical male stereotypes and how men prefer women who are available and does what is asked of her, much like how Frederik used a stereotype of how women tend to project feelings onto inanimate objects.

### Artificial Intelligence is not intelligent...

Generally, for the three groups, the majority of informants characterize the VPAs as being weak AI. Peter from the male group put it simply:

*"In my head are the computers that do exactly what you ask for. Computers do exactly what you ask them to do, and no more than that. That is what they are programmed for."* (Appendix 6)

It is clear from the interviews that the majority of the informants assume that the VPAs are preprogrammed to handle requests from on a predefined basis without much consideration of intelligent learning and understanding of context. Camilla from the female group describes them as refined search engines:

*"I suspect it does not pick up on those words, and it lacks some context somewhere. It is not programmed well enough, so very basic it is just a very, very refined search engine with some voice recognition, so it does not understand the social context of calling a woman pussy or bitch because it lacks ... There is also an answer where it is called bitch and replies that it is something with a female dog or something. It shows a lack of social context in this context, and it may be that in five years AI can do it or fifteen years, but now it just is not so far refined as a chatbot or google with voice recognition"* (Appendix 5)

In this view, VPAs should be considered a weak AI that does not have independent thoughts and is, therefore, only algorithms and logic that derive answers. In doing so, the artificial intelligence adopts the prejudices and biases contained in the material from which it is created. Thus, the VPAs ends up being just as objective as us humans. As we have seen in the theories put forth by Butler and Bourdieu, the creating of gender in human understanding has been build up through history, creating biases we, for the most part, never even consider in everyday life. So for each human-made stereotype, from this perspective, the VPA should have the same stereotypical view

of words or gendered understandings as humans, rendering them reflections of the buildup of human history rather than intelligent entities. Nevertheless, generalizations are hard to get around. They are needed for artificial intelligence to learn something at all and in the future to understand things themselves building to become stronger AIs. It is an essential condition of artificial intelligence that there are some general patterns that AI's as an example the VPA can learn from and thus reproduce.

Elena from the female group was in disagreement with the rest of the group, and was convinced that the VPAs were sophisticated enough to understand the context and the learn from it, but that the manufacturers for business purposes had decided on what kind of language to accept:

*"I strongly disagree that they are not refined enough. I am pretty sure it is a choice on the part of the provider because a list of cuss words is something you just download from the internet. There is probably someone who has already created a library of humiliations, which you would give to the software for it to learn from, and if you say "you are" and a scolding, that is a problem.*

*Technically, the software is able to understand the context. It must be a conscious choice on the part of the manufacturer if it does not answer and the way it answers"* (Appendix 5)

Elena attributes the VPAs a greater understanding of social context. However, she explains their repugnant responses as being a market-based choice, which will be further dived into in the following section.

Another aspect touched upon when the discussions revolved on intelligence is the question of whether or not the VPA experience feelings. Taking the standpoint of advocates for weak AI, the VPAs should be considered as tools without the ability to have a state of mind that experiences feelings, and thereby do not experience harassment either. On this basis and in isolation, it should, therefore, no matter what gender we assign to the VPA by default and, by extension, how we speak to it. Mainly the male group used feelings as a fulcrum for their discussion, Mathias put it like this:

*"The VPA is, of course, programmed to process all the data it receives, including finding out at what times you do one and the other, to learn rhythms. Should it have feelings they should also be there if you shut off the power"* (Appendix 6)

Mathias in the above emphasizes feelings as a constant that should be present at all times, ruling out the possibility of VPAs having feelings. Frederik from the same group followed up:

*“The question is whether the VPA can experience an assault or harassment. It does not have feelings. It does not know whether it is being harassed or not”* (Appendix 6)

These considerations are in line with the thoughts by Searle on weak and strong AI. If we acknowledge Searle's point of view, it is, in principle, impossible to create artificial intelligence of the strong form being able to feel emotions. A computer works purely syntactically; it manipulates symbols according to strictly formal rules, but these syntactic operations alone are not enough to give computers an understanding of the meaning or meaning of the meanings and emotions.

### VPA behavior reflects the market...

The informants were, for the most part, agreeing on the intelligence of VPAs to be of what would be considered weak AI, mostly reaction to request on an algorithmic basis with a strong influence of those who created them. These commercial actors, Amazon, Apple and Google/Alphabet who are backing the VPAs of this thesis, have in the view of the informants a great interest in making the VPAs as soothing and approachable to men as possible, Clara from the female group put it this way:

*“I believe to the same extent that these are products that are designed based on market research. “What do men want to hear.” They prefer a female voice that is in a specific tone, a bit daring but comfortable. I just think you have focused them on men. Like many other products”* (Appendix 5)

This view is shared by both male and female informants. Peter from the male group was more straightforward about it:

*“The target audience may just be men”* (Appendix 6)

Judging by the informants, there might be something to it. In a survey by Socratic Technologies, we get a sense of demographic on who might be interested in the usage of a VPA. Common for all the assistants in the surveys, they all have a majority of interest from the male population. This could be attributed to a stereotype that men are more interested in the usage of technology in



general. However, it could also be, as the informants for this thesis have put forward, a sign that the commercial actors behind the VPAs are marketing the product more to men than women.

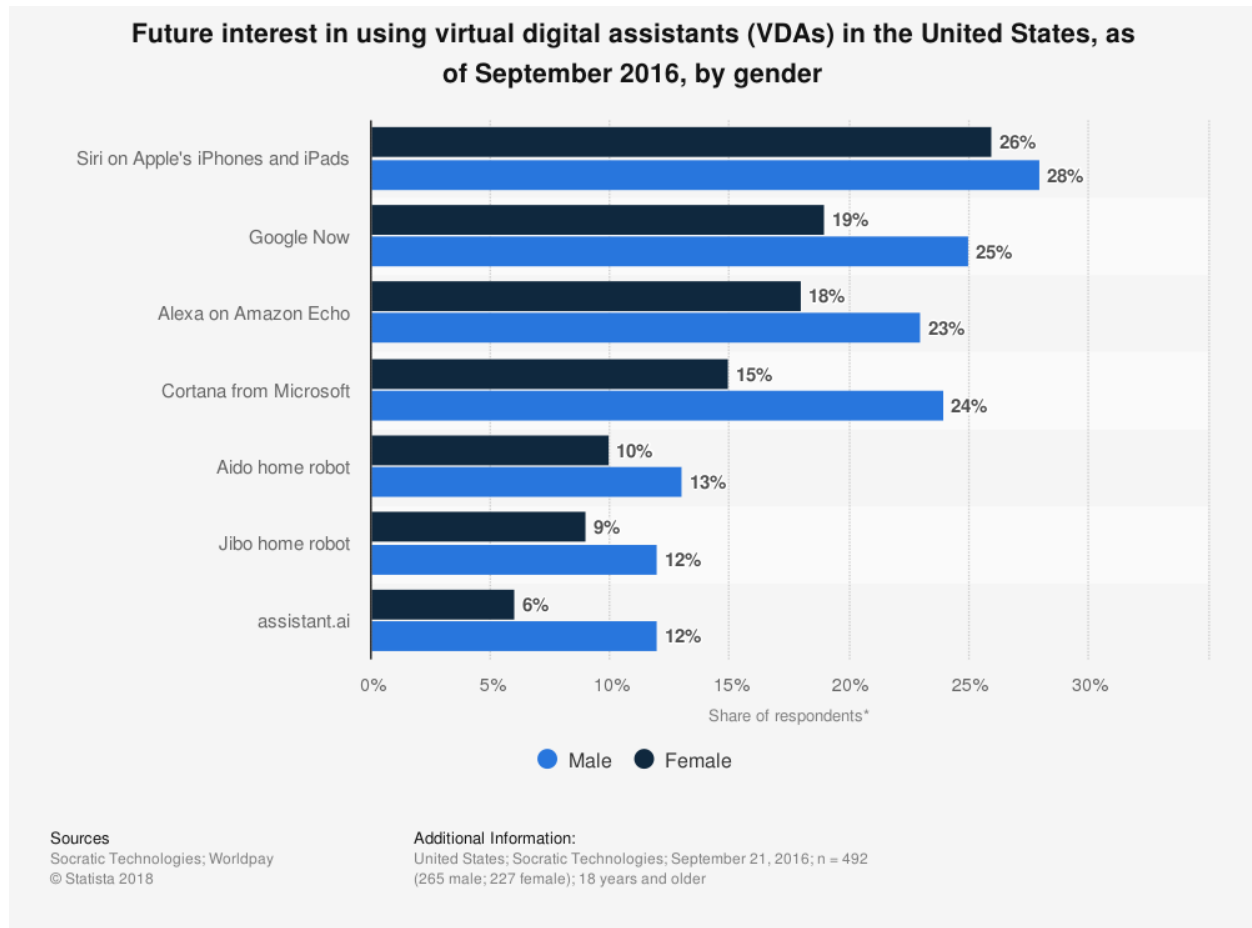


Figure 1 – Interest in using VPAs

The VPAs take on tasks that have traditionally been performed by women. They keep track of personal calendars, send flowers, and update your shopping list. Companies have an interest in making their assistants feel human and approachable. There is a commercial interest in connecting people to their virtual assistants and make them confide. It gives manufacturers more data. The submissive nature of the VPAs according to the focus groups should be attributed an aim to maximize financial gain, or as Mads from the mixed group puts it:

*"I think there may be something positive for the customer by experiencing the VPA as submissive; I think it sells well with many people without people wanting to admit it. I think there is someone who likes that it apologizes, and it justifies you in what you say. It must be pure business."*

(Appendix 7)

This emphasis on business as the primary driver of VPAs being female-gendered as default is somewhat expected, from what we know from Bourdieu and how the masculine dominance is instituted through a process of naturalization that allows arbitrary socially constructed biological differences to emerge as a fundamental basis for the gender division of labor and social action. However, Bourdieu's understanding of gender is very general. Perhaps his starting point in Kabyle society is the reason why his gender discussion is held at such a general level. However, it may also be due to his view that early-disposed dispositions, to which gender norms belong, have relatively higher weight than the later gained. Therefore, they are of general importance. Therefore despite the informants being aware of a disproportionate relationship between the genders, it is part of their underlying view of the world built up through history, as mentioned in a previous section.

### Technology and VPAs are influencing the views on the female gender...

Given the informants' view in the VPAs degree of intelligence and the reasoning behind the manufactures' choices, it is interesting to dive into what kind of influence they expect the technology to have on the female gender.

In most cases, the informants across the group agreed on whether or not the AI technology in VPAs will have an impact on society and the general views on the female gender. There has been a consensus on the fact that our use of technology can have an impact, but the effect of this impact is viewed differently by the informants. On a broad note, it can be said that the informants consider the current state of AI to have somewhat of an influence on the views on the female gender, but expect the emergence of stronger AI to have a more significant influence in the future.

When the discussion turned to effects on the real world in the female group Annemette was the first to state:

*“The technology reinforces the already existing stereotypes” (Appendix 5)*

She believes that the VPAs are a part of the constant reiteration of gender stereotypes that have been going on throughout history. Clara from the female group had a more detailed view of the effects that goes on between human and technology:

*“The way we interact with technology creates feed-back effects in terms of the way we interact with people. Especially when the VPAs are coded to remind us more and more of people, we need to be extra careful about what we learn is okay or what some stereotypes are being affirmed and passed on through the way of coding femininity” (Appendix 5)*

From a theoretical and technical standpoint, these views on the nature of AI, especially in the light of weak AI which can mimic some features of human thinking, including our understanding and behavior on gender given the nature of their creation. In the male group, another focus was on how those growing up with VPAs might be influenced by the actions of the VPA, as Frederik says:

*“One could imagine that those who grow up with VPAs may be affected by the submissiveness VPAs react with if they do not at the same time learn that there is a difference in interaction with machines and humans” (Appendix 6)*

According to the group, there is a distinction between adults and children using the VPAs, Michael continued the argument:

*“I can see the problem in those children who suddenly can communicate with anything that is not alive and thus attach themselves some habits as they pull over into the way they communicate with people. Children may not necessarily be able to distinguish, and the boundaries become blurred” (Appendix 6)*

From the discussion, one could argue that gendered understandings of the female gender will be influenced by VPAs, but that an actual effect will be more substantial in younger and future generations based on the assumption that children will have more unnuanced interactions with the VPAs making it possible for the VPA, or more likely the creators of the technology, to impose historical gender stereotypes on the generations to come.

The mixed group draws parallels to the distinction between male and female professions and how the VPAs has inherited the views on what women are expected to do, or as Julie puts it:

*“It goes well with our view of men's and women's professions, that it is women's voices that service us on, among other things, the telephone as assistants, so it taps directly into that stereotype”*

(Appendix 7)

According to Julie, the VPAs are being created as AIs that are directly related to the gendered understandings we have of the female gender and the stereotype of women being occupying service functions in society and continues:

*“I think there are large parts of the technology that make you get stuck in the past”* (Appendix 7)

This view ties in with both our theoretical view on gendered understandings and the foundation of weak AI, as it has been touched upon earlier the VPAs if considered weak AI is no better or worse than those who have created it, and the algorithms that control their immediate actions. Linnea continued the discussion touching upon what she calls pre-programmed behavior:

*“Precisely by being pre-programmed, they have some influence on some aspects of society; they help to preserve some stereotypes”* (Appendix 7)

Linnea falls back into the conception that the actions of VPAs are pre-programmed, making them a direct product of existing stereotypes. By doing so, she indirectly implies that strong AI without pre-programmed actions would be less likely to influence and preserve stereotypes in society. From a theoretical standpoint, founded in the thoughts of Dreyfus, counting on stronger AIs to emerge in the near future might have long prospects. Even if we would be able to create such an artifact, this does not take into account the fact that despite the strong AI not being pre-programmed on how to act, and it still has to learn from something, most likely human actions, that as we have seen is influenced by historical views on gender understandings and expectations of, in this case, the female gender.

## Binary systems

The purpose of this analysis is to elucidate how cultural and programmed terms in VPAs are perceived as natural and what opportunities are in artificial intelligence to erase the gender differences and how these possibilities are hampered by certain habitual assumptions about what is possible.

### Naturalized gendered understandings

Throughout the group interviews, it has been clarified that masculinity and femininity are understood from a number of characteristics connotated as male or female. The informants are characterized by the informants based on a contradiction in which characteristics are generally evaluated male or female and from this in relation to each other. In continuation of this, it seems interesting to elucidate how these relational properties can be viewed as being conditioned by a number of naturalized gendered understandings (Bourdieu, 2007, p. 15).

The contradictory relationship between the male and the female can be seen as contributing to different characteristics and responses, based on the informants' opinions, and thus finds its justification by being part of a system of homologous contradictions. The informants exemplify this system of contradictions through their understandings of a given trait and its contradiction. Thus the opposite of, for example, a high pitched voice which is female connotated, as opposed to a deep voice that is male connotated. The whole system of homologous contradictions works so that when the feminine is opposed to the masculine, the properties that are feminine are also divided according to what is perceived as its contradiction. An obvious example of this is when values are characterized as something feminine, and physics is then characterized masculine because, according to the informants, this is understood to be the opposite, the same way as inherent emotions is considered intelligent, and lack thereof on the basis of pre-programming is considered the opposite of intelligent. This relational logic may not work the same way every time; Physics is not necessarily always the contradiction of values, but in the homologous contradiction system, after the term of a feminine characteristic, one must follow his contradiction as something masculine. Relational logic works by juxtaposing properties and, in this way, also forcing contradictions. This is seen as the informants speak of hardworking as somewhat masculine, but hesitant, as they are thus conscious of having to position the feminine as a contradiction. Thus, it can be said that one does not necessarily follow the other. However, because of the structure of the system, the individual is forced to think in relational contradictions, in order to divide characteristics and responses from this:



*Figure 2 – An example of a homologous system*

This homologous system of contradiction is driven by the understanding of the existence of gender as relational and binary, maintained for the purpose of distinguishing between the genders and thus producing socially differentiated bodies in a reflection of the opposite gender (Bourdieu, 2007, p. 35). These differentiated bodies are exemplified in the informants' portrayal of a high pitching voice as being a sign of femininity, whereas, in contrast, having a high pitching voice is considered non-masculine. This is justified by the fact that the high pitch voice is associated with what is understood by the female gender and not the male gender, from which it must be understood that it is negative if a male possesses the female character, a high pitch voice. According to Bourdieu, these socially differentiated bodies are regarded as a habitus that is virile and thus non-feminine or feminine and thus non-masculine (Bourdieu, 2007, p. 35). From this, the genders, and their stereotypes can be seen as a pair of opposites, which, just as the informants put forth, are constantly relationally conditioned. Furthermore, this division between the genders helps to constitute the social order, and through various practices contributes to maintaining a dominance relationship, which can ultimately be reduced to the contradiction between the masculine and the feminine, the male and the female. This dominance relationship can be said to form part of a number of dominance structures that are the result of a constant work of reproduction supported by single agents and institutions. To this end, reproduction work is part of the explanation of why the understanding of the female gender in VPAs may seem unchanged from the history they are a continuation of, as well as when three groups of individuals express similar relational gender understandings.

This reproduction work can be traced in the informants' articulation of certain gendered understandings and considerations of AI, which are traditional and furthermore inevitable. This inevitability is seen in statements that partly contain thoughts of wanting to release themselves

and partly that this does not seem possible. An example of what the female informants refer to as traditional gender understandings are men's desire for an assistant or helper who has a soft and approachable voice. The desire is accompanied by the reason that it gives a sense of accessibility, and furthermore, it is explained that it is not a need, but on the contrary, produces a good feeling precisely to be well received. The informants are thus aware that the desire for an available assistant is of a traditional nature but tries to break this understanding by refraining from being subject to a need for this character but considers it a desire created for emotional reasons. However, the desire for the accessible and subdued VPA coexists with the thinking of what feelings a sedentary and less modest assistant can produce. It is explained that if it were the case that the VPA is confrontational and posturing with a stronger voice, it could produce a sense of being submissive and awkward as a man. It appears that behind these statements are a number of contradictions that follow that a woman should be approachable and soothing wherefrom again seen a relational logic that puts approachable and soothing in the same category, and therefore they seem to go together. On this background, a man may thus feel clumsy and awkward in confronting a virtual existence, in the event that it does not fall within the common understandings of the female gender and the biased expectation one has of an assistant because voice and approachability are essential for whether we connote something masculine or feminine. To this end, the informants continue their understanding of the societal expectation of the male as the dominant party, as they also explain, with the understanding that it is mainly men who use VPAs, that the man is the one who leads the woman in the form of the virtual assistant. Thus speaking into an overall understanding of the man as the leader and the woman as the follower. From this, a structure of domination can thus be seen, which Bourdieu describes as the masculine dominance, where dominance appears natural to both the dominant and the dominated (Bourdieu, 2007, p. 49). The dominance is seen by the informants joining it by using the contradiction systems the dominated uses to understand the world in relation to its contradiction - the dominant one. Thereby, incorporation of the naturalized gendered understandings - naturalized classifications - of which the dominated self is a part and therefore also affects the understanding of the female gender in VPAs.

Based on the above, it can be seen an illustration of gender existence, also in the context of VPAs, despite their lack of physical characteristics, as relational by entering into a system of homologous contradictions, as exemplified by high pitch / low pitch voices, modest/unassuming, et

cetera. These contradictions all form part of the thought-forms used by the informants to detect deviations and special features as natural differences. Detection of deviations is seen by the informants expressing how these can lead to an adverse effect and self-perception, for example, concerning feeling awkward. In this light, it is possible to analyze how these differences are objectified, which contributes to their existence. Further, it becomes naturalized by being part of a system of differences that are experienced as equally natural (Bourdieu, 2007, p. 15).

### Gender as a performative in a virtual existence

Based on the above analysis of naturalized gendered understandings, the following will focus on the options available to the VPA relative to doing its gender in interactions. The purpose of this is to uncover how thinking about what is possible in a virtual gendered life is prevented and limited by naturalized gendered understandings (Butler, 2010, p. 20). From this, it is thus possible to examine how the possibilities of VPAs and informants are limited by thinking about how gender is recognizably performed in VPAs and how the boundaries are challenged.

It has been explained in the above how a binary contradiction between masculinity and femininity is conditioned by a homologous contradiction system that encourages the individual to define characteristics and activities from here. On this background, the premise that gendered understandings will influence and be influenced by the informants' perception of appropriate behavior for men and women will be based on this premise. On this background, it is illustrated what opportunities each individual has for understanding the female gender in VPAs in interaction with the naturalized gender understandings.

In the first analysis, it was elucidated how informants assess pleasantness and preferences based on gendered behavior and characteristics, as well as their framework. This is seen, for example, as they relate to whether the man has to take the initiative and hardworking. However, these attitudes divided into two tracks, each representing their subculture. One track is based on the fact that the man should pay the bill on a date in order to show care and interest to the woman, which is also described as a gentleman's trait. In this view, there is a basic understanding that if the man takes the initiative, he creates a feeling in the woman of being appreciated. The second track is characterized by an attitude that women can themselves and that traditional behavior is described as old roles that can be problematic. In this understanding, women's independence is



derided by depriving them of the right of initiative. From these two poles, it can be seen how attitudes to appropriate behavior by the VPA must be consistent with the use of the technology, in order to be able to perform gender recognizably, and thus make the VPA desirable to use. In this sense, gender is an act that is not conditioned by a pre-existent attitude, but an act of gender that reflects an identity that informants associate with appropriate behavior in accordance with constant translation work (Butler, 2010, p. 71). For all the groups, it has been common that there is a consensus that the doing of the gender that one encounters in the VPAs is based on thorough market research.

It provokes the question of whose values must be taken into account, and whether one can at all claim that man has at this time captured the most complete and true understanding of ethics. If one is to impose an ethical responsibility on a self-learning artificial system, there could be interests associated with who will be allowed to determine these values. It could also raise a concern about whether it is at all possible to "translate" human values into a future strong artificial intelligence.

## Discussion

Through this thesis, it has become possible to trace a number of gendered and technological understandings that help to condition behavior concerning female gender stereotypes in virtual personal assistants. From this, it has been elucidated how these gendered understandings and the strength of artificial intelligence can be seen as founded in a homologous contradiction that requires the individual to think in and act from understandings of masculine and feminine contradictions and partly the contradiction between strong and weak AI. From the informants' opinions and attitudes about gender stereotypes, it can be seen that there are a number of limits to how gender is recognizably performed and that these are continually sought to be challenged and expanded by, for example, shifting the focus from need to feeling in connection with the woman as a servant. It also emerged that the boundaries between the feminine and the masculine were difficult to mark and, in many cases, depended on the individual's preferences.

Considering this, a number of reflections have emerged about these boundaries and how they are being challenged as a picture of a willingness to settle on gendered understandings and thus seek an equal gender understanding. Therefore, this discussion will be based on the coexistence between gendered regulatory discourses in relation to VPAs and the desire for gender equality. This will, therefore, generate a number of reflections on the paradox of making demands for equality in relation to VPAs, when the technology is seen to be marked by gendered differences. This will be done on the basis of the thesis's assumptions that gendered understandings are socially and culturally conditioned and that gendered understandings are continuously produced and reproduced. To this end, it is seen that the individual is influenced by and is influencing these understandings in the VPAs no matter if it is based on a strong or weak AI and thus forms the basis for discussing the individual's opportunities to challenge or even cross the boundaries.

The relational logic that can help individuals think in opposite pairs can, for example, create a femininity understanding derived from a masculinity understanding. Through this logic, it may seem that individuals are thinking and continuously having to relate to what is possible in terms of performing their gender and, at the same time, how virtual existences should personify the gender they are assigned. At the same time, it is also seen how individuals try to challenge the boundaries and traditional understandings of what is feminine and masculine. The logic and the system can thus be said to leave its mark in the individuals' experience of what is possible and is

thus not an unconscious restriction on the individuals. The desire to do away with traditional conceptions is thus present, but thoughts about how emancipation can be effectuated are only briefly discussed. An example of this is when it is stated that the informants hope that the technology will not affect our collective views on the female gender. However, it is difficult to define whether this desire is a sign of a new break from wanting to break the frame of how gender is recognizable or merely a condition that individuals will always seek to move the boundaries that limit the free expression.

Many of the gendered and technological understandings traced in the study can be interpreted as being traditional understandings in the sense that they are both portrayed thus, but also that they can be seen to originate from classic gender stereotypes and views on technology that emphasize women as passive and men as active, or AI as strong or weak, intelligent or not intelligent, or the computer as an object just executing orders without emotion. These understandings can, in many cases, be regarded as benchmarks used by informants to make sense in a society where every aspect of every day is always up for negotiation.

However, the desire for gender equality and the belief that the VPAs have an influence on our understanding of the female gender must be said to be stronger in some subcultures than others, which is why some try to renounce to perform dominance. It may be considered whether the thinking of what is possible in relation to gendered behavior of artificial intelligence is limited as long as there seems to be a definitive contradiction between feminine and masculine and intelligent and unintelligent. In this way, a change in gendered understanding, for some individuals, may seem like a sluggish process, that might not be possible with the current technical constraints of AI.

## Conclusion

Through this thesis, it has been the ambition to examine how technology is influenced by, and influence naturalized gender understandings in relation to female virtual personal assistants, and how gender is performed on the basis of these terms of the VPAs with which we interact. In this way, it has been the aim to make the known unknown and split up the systems that influence individuals' perceptions of naturalness in everyday culture. This has been the ambition since it is experienced that the technology presents a number of gendered understandings in relation to how the VPA is expected to act. It is thus on this background that I have found it relevant to investigate what underlies these gendered understandings and what effect the technology has on future gendered understandings. In this respect, I have highlighted through the thesis analyzes which gendered understandings can be traced in the technology, as well as which parts of the technology condition the gendered understandings, as well as how this affects what seems possible.

From the analyses, it has become clear that the intelligent part of artificial intelligence is hard to define. This is mainly because, as we can see in theory, it is challenging to define consciousness. It may be virtually impossible to know when consciousness can actually be an artificial intelligence before we simply define a certain structure or mechanism as the basis for consciousness. Even then, we may not have a consciousness that is equal to or close to human consciousness. As it has been brought up by the focus groups, when the VPA do not have emotions and consciousness, it is difficult to describe it as intelligent, making the gendered understandings it portrays a reflection of the person or organization behind its understanding of what a female assistant is and how it should act. As long as the AI behind VPAs are to be considered weak, it is never to be considered intelligent, and is thus just as mentioned above, an echo of the gendered understandings we have come to know through years of internalization. Stronger AI able to learn and adapt on its own. On the other hand, seems to be an exciting alternative, that seen from the outside might be able to break the ties that traditional weak have been tied up by.

The articulation of appropriate behavior contributes to illustrating a picture of a complicated issue regarding the gender of the VPAs because it is influenced by a number of traditional gender understandings that are continually negotiating for their justification in modern society, while at the same time being, in its most basic form and programming, created and intelligent from

learning the past. From this, it can appear that the VPAs are significantly affected, and to a lesser extent, affect what the informants think is appropriate and what wishes they have for how the VPAs can influence the understanding of the female gender in the future.

Thus, it can be said that in the context of VPA's gender portrayal, it is crucial that consumers are familiar with how gendered expressions are translated and understood as this affects the perception of appropriate behavior. It can be said that an end goal of the VPA if one exists, is to make itself attractive. This attractiveness can be said to be closely related to how the gender is recognizably performed in interaction with a number of naturalized gendered understandings. However, the limits of what is considered appropriate behavior are forever negotiated and must be said to be influenced by the individual's subculture. This is evidenced by a more egalitarian stance on gender and artificial intelligence and a general reflection on absolutes in appropriate behavior, and thus a greater openness to the violation of naturalized gender understandings can also be seen.

Virtual personal assistants can, with this, be said to be conditioned and shaped by a number of gendered understandings of appropriate behavior. These understandings are driven by a homologous system of contradiction that, among other things, influences consumers to think of the feminine as the masculine contradiction. It is, among other things, based on these two factors that the VPAs can be said to perform their assigned and imaginary genders recognizable to appear attractive. This attractiveness seems to depend on the translation and understanding of the gendered expression. The sluggish system and the ever-changing culture draw a picture of a complicated situation, characterized by a pronounced separation of gendered expressions, which, however, leaves a number of terms for negotiation, but not for transgression, making the VPAs carriers of already established understandings of the gender, that will reinforce or maintain our views on the female gender.

## References

- Bourdieu, P. (2007). *Den Maskuline Dominans*. København: Tiderne Skifter.
- Brunak, S., & Lautrup, B. (1990). *Neurale Netværk*. Munksgaard.
- Butler, J. (2010). *Kønsballade: feminisme og subversionen af identitet*. København: THP.
- Chalmers, D. J. (1992). Subsymbolic Computation and the Chinese Room. In *The Symbolic and Connectionist Paradigms*.
- Dennett, D. (1991). *Consciousness Explained*. USA: Little, Brown & Co.
- Dennett, D. (2006). *The Magic of Consciousness*. Retrieved from Youtube:  
<https://www.youtube.com/watch?v=dFTTn-Co5F8>
- Dreyfus, H. L. (1992). *What computers still can't do*. Cambridge, MA: MIT Press.
- Dreyfus, H. L., & Dreyfus, S. E. (1986). *Mind over Machine*. Oxford: Basil Blackwell Ltd.
- European Commission. (2018). *Artificial Intelligence for Europe*. European Commission.
- Fessler, L. (22. February 2017). *We tested bots like Siri and Alexa to see who would stand up to sexual harassment*. Hentet fra Quartz: <https://qz.com/911681/we-tested-apples-siri-amazon-echos-alexa-microsofts-cortana-and-googles-google-home-to-see-which-personal-assistant-bots-stand-up-for-themselves-in-the-face-of-sexual-harassment/>
- Foucault, M. (1982). Afterword: The subject and power. In H. Dreyfus, & P. Rabinow, *Michel Foucault: Beyond Structuralism and Hermeneutic*. Chicago: The University of Chicago Press.
- Görlich, A., & Kirkegaard, L. (1999). *Historier om kærester og kærlighed: konstruktioner af heteroseksualitet*. København: Gyldendal Uddannelse.

- Halkier, B. (2009). *Fokusgrupper*. Frederiksberg: Samfundslitteratur.
- Jacobsen, M. H. (2010). Metodologiske perspektiver. In M. Hviid Jacobsen, K. Lippert-Rasmussen, & P. Nedergaard, *Videnskabsteori: i statskundskab, sociologi og forvaltning*. København: Hans Reitzels forlag.
- Jensen, A. F. (2005). *Mellem ting Foucaults filosofi*. Frederiksberg: Det lille forlag.
- Krueger, R., & Casey, M. (2000). *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks: Sage Publications.
- Kurzweil, R. (2005). *Singularity is Near*. New York: Viking Press.
- Kvale, S., & Brinkmann, S. (2009). *Interview: introduktion til et håndværk*. København: Hans Reitzels forlag.
- Kvindemuseet. (2019). *ER DU KØN?* Retrieved from Kvindemuseet: [http://kvindemuseet.dk/wp-content/uploads/Er-du-køn\\_elevmateriale.pdf](http://kvindemuseet.dk/wp-content/uploads/Er-du-køn_elevmateriale.pdf)
- LGBT Danmark. (2016, March 6). *Kønsidentiteter og kønsforståelser*. Retrieved from LGTB+ Danmark: <http://lgbt.dk/ordbog/koensidentiteter-og-koensforstaaelser/>
- Lykke, N. (2008). *Kønsforskning: en guide til feministisk teori, metodologi og skrift*. Frederiksberg: Samfundslitteratur.
- OECD. (2018). *OECD Science, Technology and Innovation Outlook 2018*. OECD.
- Rasborg, K. (2009). Socialkonstruktivismen i klassisk og moderne sociologi. In L. Fuglsang, & P. Bitsch Olsen, *Videnskabsteori i samfundsvidenskaberne: på tværs af fagkulturer og paradigmer*. Roskilde Universitetsforlag.

- Rosenberg, T. (2007). Queerfeminisme – en introduktion. In D. M. Søndergaard, *Feministiske tænkere: en tekstsamling*. København: Hens Reitzels forlag.
- Søndergaard, D. M. (2006). *Tegnet på kroppen: køn: koder og konstruktioner blandt unge voksne i Akademia*. København: Museum Tusculanum.
- Searle, J. R. (2004). *Mind: a brief introduction*. New York: Oxford University Press, Inc.
- Stormhøj, C. (1999). *Kønnets Regerende Dronning - En Introduktion Til Køn Og Krop I Judith Butlers Forfatterskab i Kvinder, Køn Og Forskning - Fra Beauvoir Til Butler 1999 (2)*.
- Turing, A. (1936). *On Computable Numbers, with an Application to the Entscheidungsproblem*. Hentet fra Abelard.org: <https://www.abelard.org/turpap2/tp2-ie.asp>
- Turing, A. (1950). *Computing Machinery and Intelligence*. Retrieved from Abelard.org: <https://www.abelard.org/turpap/turpap.php>
- Wæver, O. (2010). Strukturalisme og poststrukturalisme. In M. Hviid Jacobsen, K. Lippert-Rasmussen, & P. Nedergard, *Videnskabsteori: i statskundskab, sociologi og forvaltning*. København: Hans Reitzels forlag.