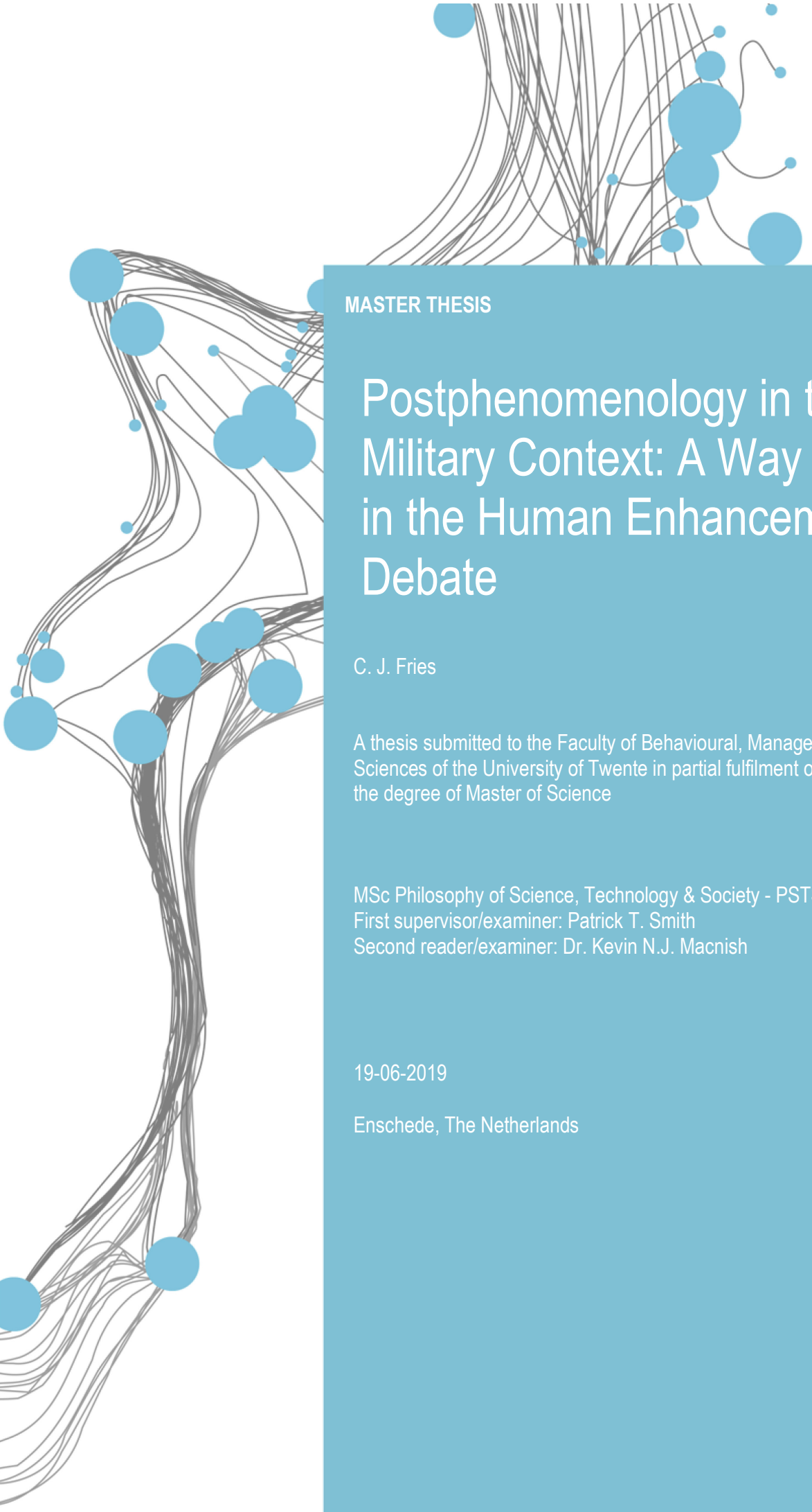

MASTER THESIS

Postphenomenology in the Military Context: A Way Forward in the Human Enhancement Debate

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Abstract

The debate on human enhancement between the bioconservatists and the transhumanists is in a stalemate. It is currently stuck on the question of whether the human being remains human after enhancements. Postphenomenology provides a way to take the discussion forward. In order to do this, this thesis discusses military human enhancement technologies and analyzes them from the perspectives of the two debating parties, the bioconservatives, and the transhumanists. The phenomenological point of view is used to gain new insight into the overall debate on human enhancement technologies.

The main question of this thesis is: How can postphenomenology, in a military context, provide a way forward in the human enhancement debate? In order to support this question, the thesis first introduces the current military human enhancement technologies in development and why they are relevant to the military. Furthermore, the questions why the military enhances its soldiers, and what the effects are of these enhancements, are discussed in Section 2. The arguments of the two main philosophical parties in the human enhancement debate, the bioconservatives, and the transhumanists are explained and brought in a debate with each other. Discussing why these two parties are in a stalemate as it is based mostly on the metaphysical question of what defines the human being, and whether or not the human remains human when they enhance themselves. Postphenomenology provides a way forward in this discussion. By stating that postphenomenology dissolves the metaphysical debate surrounding human enhancement, as the human being can already be considered a cyborg, as well as, that the human is something that is continuously in development.

Thus, there is no status quo for either the bioconservatives to conserve or for the transhumanists to transcend from. Dissolving the metaphysical debate opens up the way to focus solely on the practical issues that human enhancement technologies bring with them.

The military context, and especially the example of the soldier, make for a more explicit and more convincing argument of seeing the human being as a cyborg. In the military, there is an abundance of use of human enhancement technology, which makes the military context an exciting place to analyze human enhancement technologies, as well as applying postphenomenology in order to understand the effects of human enhancements. The analysis of these human enhancement technologies can then be used as a benchmark when discussing human enhancement technologies entering the civilian context.

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Section 1: Introduction

1.1. Thesis statement

Militaries of all nations are always working to give their soldiers an edge over their enemy by enhancing them. These enhancements have taken many shapes over the ages; giving soldiers extensive training, new strategies, tactics, weapons, vehicles, or other kinds of technologies. The soldier has evolved to improve his capabilities to overcome the enemy, which not only makes the relation between technology and warfare evident throughout history, but it is also evidence of the way that combat is performed (Black, 2013; Roland, 2016). This history makes it safe to say that technology and the military are thoroughly intertwined, meaning that technology has always been a part of warfare.

The military's search for the ultimate soldier is a continuous process. Note that the term technology is meant in the broadest sense of the word, as it not only addresses the things mentioned above like equipment and vehicles, but also drugs like cognitive enhancers and medical techniques and practices are an essential part of this process (Blackmore, 2011; Black, 2013; Kamieński, 2017).

The development of technologies has changed the relationship between technology and the soldier over time. The soldier is being enhanced through all kinds of technical developments to keep up with the developments in warfare. An example of this is the use of flight suits for fighter pilots. The human body is not made to function at high altitudes. Thus, the development of flight suits that keep the pilot warm and conscious, combined with oxygen masks that provide the pilot with breathable air are technologies that allow the pilot to operate on high altitude flights, and during high G-force maneuvers. However, this goes even further as the military provides pilots and soldiers with cognitive enhancers in order to keep them awake during long missions (Kamieński, 2017). As Naval Officer, Dr. Charles Stevenson states: "With military technology reaching a new level of development, traditional logic had been reversed: it was no longer the tools of war that had to be adjusted to man, but man had to be fitted to these increasingly advanced, faster, and more powerful machines" (Kamieński, 2017, p. 155).

It is the development of ever newer technologies that soldier is in a situation where the soldier enhances himself in order to keep up, both in order for the soldier to be able to use new technologies, as well as that these technologies grant the soldier new capabilities. This

development creates an environment for the soldier where he is a cyborg because of the variety of human enhancements he uses (Lin, 2012).

Furthermore, this development in the military adds to the transhumanist/bioconservatist discussion on human enhancement, as the military can provide interesting new insights in how human enhancements in the military influences the development and implication of human enhancements in the civilian context. It is, after all, not uncommon for technology to transition from a military setting to a civilian context, such technologies include the microwave, duct tape, GPS, the internet.

The main participants of the human enhancement debate are the transhumanists and the bioconservatists. Transhumanists like Bostrom, More & Vita-More, and Buchanan are in favor of developing sophisticated technologies to enhance the human. Bioconservatives like Fukuyama, Kass, and Sandel are against enhancing the human being, as they see it as a threat to human dignity and human nature. Bioconservatives uphold intrinsic objections against human enhancements, where the transhumanists only see possible practical objections. The difference between intrinsic objections and practical objections is those intrinsic objections based on metaphysics, whether it is good or bad to do something, and practical objections based on whether the enhancement is safe or not.

In the past few decades, these two parties are in a stalemate on the discussion, whether it is permissible for humans to enhance themselves, without any clear answers. This discussion dissolves as it based on the wrong way of looking at the human being. There are two metaphysical mistakes made by both the bioconservatives and the transhumanists. First of all, they uphold the status quo of what is a "normal" human being. Secondly, they assume a dichotomy between human being and technology. Sections 3.3 and 4.3 will be discussing this in further detail why these ways of thinking should be considered.

This thesis will provide a way forward in solving this stalemate by adopting the postphenomenological way of looking at the human being and technology. The postphenomenological method does not uphold a dichotomy between the human being and technology, and it does not assume a status quo of the human being, as the human being is continually developing itself, without a clear definitive definition (Verbeek, 2005, 2008, 2011, 2014; Aydin, forthcoming). The main question that will be answered in this thesis is: How can postphenomenology, in a military context, provide a way forward in the debate on human enhancement?

The debate on human enhancements is based mostly on public use of enhancements. Moving the debate into the military context provides new insights, as the military is often a

source of new technologies that influence daily lives. Thus, it is essential to investigate how technology influences the life of a soldier. Soldiers can already be considered cyborg, given the use of technology by the military and especially by the individual soldier. Some philosophers already argue that all humans can be considered cyborg (Wiener, 1966; Haraway, 1991; Galison, 1994; Clark, 2003). The soldier is being enhanced in order to combat, for instance: fatigue and misjudgment. The soldier uses cognitive enhancing drugs in order to improve their capability and survivability on the battlefield. Section 2 will go deeper into the types of human enhancement that are currently in use or are currently in development by the military.

As mentioned before, postphenomenology states that there is no dichotomy between human and technology; instead, the use of technology is an intrinsic part of being human, as technology mediates the human's experience. Furthermore, there is no "normal" human being, no status quo, as the human is continuously redefining itself (Aydin, forthcoming). Adopting postphenomenology will grant a new way to think about the human-technology relation; it will dissolve the metaphysical debate on whether a human being remains a human being when it enhances itself.

By stating that the human has always been cyborg, it becomes possible to collect all of the similar terms that propose a human and technology relation under one banner. Although Verbeek (2005; 2008; 2011; 2014) is a bit cautious with this step, a side note here is that there are transhumanists that argue that there is a difference between being transhuman and cyborg, as it is not necessary to be physically enhanced to be considered transhuman (More & Vita-More, 2013). Then again, it is also not necessary to be physically enhanced to be considered cyborg, as being cyborg can be considered a natural part of the human being (Haraway, 1991; Clark, 2003). This "human as a cyborg premise" is an integral part of this thesis, as it depends heavily on the acceptance of this premise for the answer to the research question.

A practical result of this thesis would be for developers of human enhancements to adopt the postphenomenological method, where the assessment of the technology should be done during the development, instead of having an ethicist judging the technology from the sideline. When developing technologies, one of the goals should be that it is specially created for a single purpose, minimizing the chance of multistability of human enhancement technology.

To come back to the military context. Moving the debate to the military context results in two things, first of all, it adds a new context to the human enhancement debate and second the premise of the human being as a cyborg is more evident in the military context. Throughout history, there are examples of the military experimenting on its soldiers, with, and without the soldiers' consent (Taraska, 2017), which entails that the military is willing to take more risks

with its soldiers' wellbeing, than for instance a medical company with its patients. Where in the postphenomenological way of thinking, the wellbeing of the human being considering the use of technology is deemed paramount (Verbeek 2011; 2014). This would then be a focus on the more practical side of human enhancements; as technology and the human being coshape each other, there is room to design technologies that provoke a particular way of interaction with the technology. To avoid objections during the development stage, developers of technology should take into consideration the mediating effect of the technology on the human.

As mentioned before, by turning to postphenomenology, the current discussion on human enhancement becomes obsolete as it is based on false metaphysics, which allows for more focus on the practical issues that come with human enhancement. Examining the military context of human enhancements allows for a more productive study as the soldier is already enhanced in multiple ways. The soldier is, therefore, a clear illustration of the "human as cyborg" argument.

This thesis is of added value to the ongoing debate between transhumanists and bioconservatives as it dissolves their disagreement, and it brings the discussion into the military context. In postphenomenology, human enhancements are often a topic of discussion, but the military human enhancement is less represented. Applying these philosophical views to the military context gives new interesting philosophical insights into the use of human enhancements, as well as that it provides different standpoints to what the military is discussing. It could provide a benchmark for when human enhancement technologies should flow through to civilian lives, which proves to be interesting, as, throughout history, technologies have adopted from military implications to civilian implications are not uncommon.

Thus, by researching what technologies are in development regarding human enhancement in the military can provide a fascinating insight into how these technologies might affect the civilian world if these technologies would be adopted there. This thesis contributes to the technological and scientific realm, by giving an argument on the conceptual analysis of military human enhancement technologies in current development, and the overall implication of these human enhancement technologies.

1.2. Definitions of key terms

There are terms used in this thesis where philosophers might disagree on concerning the definition. Therefore, these terms will be briefly addressed and defined in this subsection. The Terms used in this thesis are likely to confuse the reader. Therefore, this subsection will define them. The terms mentioned here are merely stipulative; the reasons for using these particular definitions will be discussed in the relevant sections.

Technology

In this thesis, technology will understand itself as not only physical artifacts, tools and equipment used by human beings, but also the non-physical processes as training methods, as well as any form of drugs, either natural or human-made. Thus, all methods to enhance the human being can be considered technology.

The military

The military in this thesis refers to all national militaries. Although most sources that this thesis discusses refer to the U.S. military. The reason for this is because the developments of new technologies are not restricted to one arm of the military, nor of one country. Whenever there is a more specific case in, for instance, an example, it will clarify which particular military is working on this specific technology.

The cyborg

This thesis will make use of Donna Haraway's definition of the cyborg. The term cyborg is defined by Haraway (1991) as: "A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction" (p. 117). Verbeek also uses this definition (2008; 2011; 2014). Both mention the merging of the human and the non-human. Haraway also acknowledges the blurred boundary between these two entities. "The boundary between physical and non-physical is very imprecise for us" (Haraway, 1991, p. 119).

Human enhancement

The definition of human enhancement that this thesis uses comes from Buchanan (2011). "An enhancement is an intervention – a human action of any kind – that improves some capacity (or characteristic) that normal human beings ordinarily have or, more radically, that produces a new one" (p. 5). Enhancements can be cognitive or physical. Buchanan (2011) notes that the

term enhancement is used mostly in combination with biomedical technologies, but there is an entire discourse of enhancements outside the realm of biomedical technologies. E.g., deep brain stimulation, ultrasound, which is all the most important to the evolvement of the human being (p. 10).

Furthermore, Buchanan (2011) describes cognitive enhancements as follows "Cognitive enhancements increase normal cognitive capacities. Cognitive capacities include memory (of which there are several kinds), attention, reasoning, and what psychologists call "executive function," the ability of the mind to monitor, direct, and coordinate various mental operations" (p. 5).

Bioconservatism

For this thesis bioconservatism will be defined as follows: bioconservatives defend the human nature claim, oppose enhancement and advocate policies that ban or heavily restrict enhancement (Roache & Clarke, 2009, p. 16). Human nature is defined as "the sum of the behavior and characteristics that are typical of the human species, arising from genetic rather than environmental factors" (Fukuyama, 2002, p. 130). What bioconservatives understand under the term human nature will be further explained in Section 3.

Transhumanism

This thesis will use the following definition of transhumanism: "the study of the ramifications, promises, and potential dangers of technologies that will enable us to overcome fundamental human limitations, and the related study of the ethical matters involved in developing and using such technologies" (More & Vita-More, 2013, p. 3). With the addition of: "The intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities" (More & Vita-More, 2013, p. 3).

Posthumanism

Max More formulates the definition of posthumanism or being posthuman that this thesis adopts as: "Persons of unprecedented physical, intellectual, and psychological capacity, self-programming, self-constituting, potentially immortal, unlimited individuals" (Broderick, 2013, p. 430). In order to become posthuman, More & Vita-More (2013) state that the limitation of the "human condition" is to be overcome, which entails that all the bad parts of being human,

for instance growing old, and diseases, are no longer a part of its nature. Furthermore, the posthuman would have more extensive freedom of form, with higher cognitive and physical capabilities (p. 4). When comparing this to the definition of the cyborg, it is strikingly similar.

Postphenomenology

The definition of postphenomenology that this thesis adopts is that of Verbeek (2005). Postphenomenology is a philosophical point of view where there is no dichotomy between the object (technology, or the world) and subject (the human). Furthermore, context is vital as something can be right in one context, but this does not necessarily mean that it is right in another context. Section 5 will address this. Postphenomenology further states that subject and object constitute each other; this means that humans and the world are intertwined (pp. 112-3).

Section 2: War & technology

The human being and technology have a long history together, which is not only discussed by philosophers, but also by historians. Section 2.1 goes into state of the art in military human enhancement. Subsection 2.1 introduces and discusses the human enhancements that are currently in development and may have an impact on the soldier. This thesis adopts Wilson's (2004) use of the categories: external, and internal biotechnical enhancements. The latter is divided again into passive and active internal biotechnical enhancements. According to Roland (2016), "Technology has changed warfare more than any other variable" (p. 1), which holds not the only merit for war in general, but also the individual soldier. The following subsections will discuss how military technology affects the individual soldier. Section 2.2 goes into why the military enhances its soldiers. It is deemed necessary to enhance the soldier, who is becoming the weakest link in the military organization because of the development of modern technology. Section 2.3 will address how human enhancements and technology affect the soldier and how technology influences the soldier's experience of war. Section 2.4 will address in more detail why the soldier can be seen as a cyborg.

Overall, this section introduces the technologies and the military background for this thesis and will be referred back to in the sections that follow. Furthermore, the examples explained in the following subsection also show how close the relationship is between the soldier and technology.

2.1. State of the art of enhancing soldiers

This section explains how the military has shifted from developing technology for the soldier to enhancing the soldier to meet the requirements as set by new technologies, which is a constant back and forth situation with military technology.

The capability of the human body is limited. Thus, instead of adapting the technology to the human, the human has to be adapted to the technology. Blackmore (2011) explains that the U.S. soldier was not allowed to carry more than a third of the soldiers' body weight. Because of the increase of equipment, the military decided to enhance the soldier, instead of making the amount the soldier had to carry less (p. 45). This development renders the human to become the weakest link in the military machine, in the sense that the military enhances the soldier in

order to keep up with the needs of the technology and the soldier's position is no longer the military's priority. Why this is the case will be discussed in more detail in Section 2.2.

2.1.1. External (bio)technical enhancements

External biotechnical enhancements strengthen the human by adding technological artifacts to the outside of the human body. There are many ways for enhancing the soldier with technology other than biotechnology. Examples of external (bio)technical enhancements are exoskeletons, haptic suits, and Brain-Machine Interfaces (BMI). Other examples not discussed in this thesis are body armor, helmets, night vision goggles, and camouflage.

The U.S. Defense Advanced Research Projects Agency (DARPA) is developing several prototypes of exoskeletons (Blackmore, 2011; Vergun, 2013; Nield, 2014; McCarty, 2014). The exoskeleton is an external skeleton that supports the movement of the joints of the person wearing it. It increases the weight load that a soldier is allowed and able to carry. This way, the soldier can move over a more extended period with less effort, which results in a less fatigued soldier. It further multiplies the soldier's strength, improving their physical capabilities. Some exoskeletons designs are so that the soldier can wear them under their clothing (Adams, 2018; McCarty, 2014).

The military is interested in this technology as it increases the endurance of the soldiers, who at the same time, can carry more equipment. Because of this, the soldier can stay on the battlefield for a more extended period, without additional external assistance. Due to the strength multiplication, the military would be able to send fewer soldiers for the same mission.

DARPA also funds projects concerning prosthetic limbs. Prosthetic limbs are replacements for a soldier or anyone who lost, for instance, an arm or leg. Prosthetics with advanced robotics make it possible for its user to regain normal bodily functions (Singer, 2010; Gambel, 2014; Wilson J., 2013). The development of these prosthetics is increasing in such a way that it is possible for 40 percent of the soldiers within the U.S. military with prosthetics return to their former units (Singer, 2010, p. 376). However, the possibility is also there to increase the power of prosthetics that it would go beyond the ordinary strength of a human being (McCarty, 2014; Taraska, 2017), which could further enhance the soldiers' strength if need be.

Singer (2010) gives an example from another branch of the military that enhances its soldiers, or in this case, their pilots — a haptic suit designed for fighter pilots that allows them to "feel" parts of the plane. If a part of the plane overloads during a maneuver, the pilot will

feel a vibration in the corresponding arm. On the other side, the plane keeps track of the pilot's sleep cycles during long missions (Singer, 2010, p. 70).

Another comparable technology is a tactile flight suit for helicopter pilots that makes the pilot aware of the helicopter's movements through small puffs of air, which gives the pilot a vibrating sensation if the helicopter tilts sideways or forwards or backward, which allows an experienced pilot to fly the helicopter blindfolded (Clark, 2013, p. 118).

Both these technologies are attractive to the military as it improves the pilots' capabilities through a closer relationship with the aircraft. It gives the pilots a greater sense of control over the aircraft as well as an option to keep control over the aircraft if other instruments fail.

Another way to enhance the soldier is to hook the soldier to a Brain-Machine Interface (BMI). It is a device that is in development by DARPA since the nineteen seventies (Blackmore, 2011). A BMI is a device that connects the brain directly to a computer; by doing so, the user controls the computer without the use of input devices like a mouse or keyboard. It allows for quicker interaction between man and machine. There are several ways of achieving this. It can be done either by brain implants, but it could also be done simpler by using headgear with brain sensors that pick-up the user's brainwaves (Cuthbertson, 2016; Geveke, 2016). These brainwaves translate into electrical signals that allow the user to control the computer (Blackmore, 2011; Geveke, 2016). There are multiple purposes to the BMI, for instance, the recovery of brain-damaged veterans, but it can also be used to control prostheses and exoskeletons (Blackmore, 2011; Cuthbertson, 2016; Geveke, 2016; Harrison Dinniss & Kleffner, 2016; Taraska, 2017).

The military interest in this technology is that BMI allows for quicker interaction between man and machine, which is beneficial to the military, as it makes quicker decision making possible. Another option is that the soldier uses a BMI to operate an exoskeleton, while the soldier is wearing it or remotely. Thus, the soldier can be at one place, and the controlled exoskeleton in another, such as what is currently happening with Unmanned Combat Aerial Vehicles (UCAV).

2.1.2. Internal biotechnical enhancements

Wilson (2004) distinguishes between two categories, namely: passive and active internal biotechnical enhancements, how these implanted enhancements work differs. Where passive enhancements are often embedded in the human body, the active enhancements exist either in drug form or in the form of genetics. Wilson (2004) describes passive internal biotechnical

enhancements as enhancements implanted in the human being. They do not alter the human's chemistry, where the active internal biotechnical enhancements do alter the human's chemistry (p. 193).

2.1.2.1. Passive internal biotechnical enhancements

An example of a passive internal biotechnical enhancement is a device that monitors soldiers in order to provide more information to both the soldier and his superiors. DARPA invests in companies that develop implantable biosensors, such sensors, implanted in the soldier's skin can provide information on the soldiers' vital signs, like heart rate and oxygen levels (Palmer, 2016; Geveke, 2016).

This technology continuously monitors the soldier's vital signs, which makes it attractive to the military as it means that the soldiers will be more quantifiable. With this information, soldiers and their superiors become more aware of the limits of the soldier's capabilities. Because of these small sensors, any room for improvement, or possible deficiencies, become more evident, which could then be compensated, or enhanced by technology. Furthermore, the information gained is also beneficial for medical personnel when helping injured soldiers, as they have instant access to vital signs and can thus help those who are the easiest to help or help those who have the most need for medical attention.

2.1.2.2. Active internal biotechnical enhancements

The most used form of active internal biotechnical enhancement is cognitive enhancers; the military and soldiers use cognitive enhancers like drugs for quite some time (Kamieński, 2017). These drugs include cocaine, methamphetamine, Dexedrine, and Modafinil. These drugs are used to enhance the soldiers' focus and awareness; it further allows them to work for long hours. Usage is either prescribed by the military or self-induced by the soldier. The use of these drugs is standard during combat missions in the past three centuries[1] (Kamieński, 2017).

The use of cognitive enhancers is beneficial to the military as it provides them with soldiers who are more focused on their duties. As well as, that it allows them to send pilots on more extended sorties as the pilots can be kept awake and focused during the entire mission.

Other cognitive enhancers try to lower the chance of post-traumatic stress disorder or reduce the soldier's fear after combat. Emotions like fear and rage are often responsible for war atrocities. By reducing these emotions, the soldier could remain more rational during combat

[1] Cognitive enhancers like nicotine, caffeine, and alcohol are kept from this section.

(Harrison Dinniss & Kleffner, 2016; Taraska, 2017). A more rational soldier would be more obedient, controllable, and reduces the change of soldiers acting on impulse.

Another type of active biotechnical enhancement is provided by Wilson (2004), who explains the use of implanted drugs that can be remotely released. The drug activates when a specific chemical is detected. The soldier or a superior can also release the drug manually. This type of enhancement is meant to prevent harm to the soldier, which means that the soldiers will receive the drug implant before they are sent off to their destination. The implanted drug can be designed to prevent, for instance, radiation poisoning or anthrax poisoning. This enhancement provides a safeguard for the military, as it can protect soldier to potential, but unexpected, threats.

Another biotechnical enhancement is that of genetic enhancement, which can enhance certain traits via genetic manipulation. Examples of the possibilities are improved muscle growth, better eyesight, and overall cognitive capabilities (Fukuyama, 2002b; Bostrom, 2003b; Philips, 2015). Genetic enhancements are also the most controversial and heavily debated human enhancement and the main reason for the stalemate in the human enhancement debate.

There are two different forms of genetic enhancement, somatic genetic enhancement and germ-line genetic enhancement. Germ-line enhancement entails the enhancement of the reproductive genes, either the sperm or egg cells. These genes can be enhanced before the conceiving of a child, or it could be performed on the embryo. Somatic genetic enhancement is the most advanced of the two categories. Somatic enhancement entails the enhancement of individual gene cells and is sometimes used as a cure for genetic diseases (Resnik, 2000, pp. 365-6). Somatic enhancement is also the type of genetic enhancement that would allow for the enhancement as mentioned above. Because it is limited to the individual and would not harm any of the soldier's offspring after the enhancement, somatic enhancements are the most interesting for the military. Thus, if anything goes wrong with one individual, it does not affect anyone else.

Genetic enhancements are attractive to the military as they improve the soldiers' capability without the use of cognitive enhancing drugs or exoskeletons. Also, these genetic enhancements improve the soldiers' overall durability and survivability for a more extended period and not just temporary.

2.2. Why the military enhances its soldiers

The military enhances its soldiers in order to improve their capabilities and survivability on the battlefield and to make sure that the soldier can keep up with the development of new military technologies.

The history of technology and the military creates an image of how this came to be. Roland (2016) describes the discovery of a couple of spears in a mine in the middle of Germany, dating back to the stone age. He poses the question of whether these spears were used just for hunting, or also for warfare? Although this is difficult to say, the spears at least may have been used to defend the owners since there are plenty of records of spear usage in ancient warfare. However, the discovery of these spears shows that humans made weaponry from the stone age, a development that has not stopped since then. Since those ancient times, the connection between technology and warfare is there to stay. "Warfare has changed technology almost as much as technology changed warfare" (Roland, 2016, p. 4).

Throughout history, the role of technology in the military has become more and more prominent. Where it at first were simple tools to give the soldier a better way to eliminate their opponent. The distance was used to enhance the soldier's survivability, which was created by the use of machines. The first example of this is the spears as mentioned earlier, or the bow and arrow. By creating distance between the user and his enemy, it created a whole new way of warfare (Roland, 2016, p. 9).

There is a cycle in the development of military technology where one type of weaponry is made to counter the other. "Against artillery humans dug trenches, and to keep the trenches in place, they put up machine guns and then made tanks to confront the machine gun. In the Second World War, we put fast low-flying aircraft and personal rockets against tanks: the roundabout continues. If technology is not in control, it is hard to believe we are either" (Blackmore, 2011, p. 4). Blackmore's (2011) example is from the 20th century[2], but these cycles within military technology predate modern technology. Some examples of this are the sword and shield or the castle and the siege engine. Reacting to new developments keeps the development of new technologies going throughout time.

Black (2013) argues that there is more technology involved in warfare than those technologies that help the human being in the act of killing other human beings. Technologies

[2] Although Blackmore's (2011) example is focused on the 20th century, during the American Civil War in the 19th century, there was already plenty use of artillery and trench warfare.

like the steam engine and the combustion engine, as well as ships, hot air balloons, and aircrafts all have been technologies that were not intended initially for military purposes. Historians often neglect these technologies, but they are essential and only discussed or mentioned when they are involved in actual combat.

Furthermore, it is also these kinds of technologies that made it possible for the human being to go to places where they otherwise cannot go, like the high seas and the sky. "Far from acting as a constant factor across time, technology has expanded humanity's ability to operate in a number of environments, especially under the water and in the air, and has enhanced human specifications, notably of speed. As a result of this expansion, the importance of technological factors has been enhanced: for capability, for relative effectiveness, and for governmental, institutional, and popular perception. Moreover, there is no reason to believe that this process will necessarily become less significant in the future" (Black, 2013, p. 271).

These technological advances, together with the increasing mechanization of warfare, makes the human being becoming less and less significant in war zones. The human body is fragile and is, therefore, often not able to resist the extreme violence of combat. Previously this would be solved by using a shield or armor, but these devices become less and less adequate; therefore, it is no wonder that modern militaries are working on robotics and autonomous weapon platforms, such as drones (Blackmore, 2011; Singer, 2010). People within the U.S. military claim that there is no longer a place for the human on the battlefield of the future, which is not only because of the human's weak flesh and the fact that the human being cannot survive in extreme places, including deserts and arctic locations without any form of equipment. Robots are less affected by weather and other factors like emotions and fatigue; these properties combined with superior computational power, which allows for quicker reactions threaten the soldier's place on the battlefield (Blackmore, 2011; Singer, 2010). There is a fear within the military that there is no place for the soldier left if robotic entities are replacing them, therefore enhancing the soldier is necessary in order to prevent this. The other reasons for enhancing soldiers are to make them perform better in the aforementioned extreme environments for a more extended period and to increase their effectiveness, durability, and survivability.

2.3. How technology affects the individual soldier

The use of technological enhancements changes how the soldier perceives himself, as well as how others perceive the soldier. The "warrior ethos" is being diminished by technology, the soldier is seen less like a warrior and more as a machine operator by the military (Coker, 2007, p. 105). In order to enhance the soldier's fighting capabilities and survivability, the soldier has been using all kinds of technologies. It is a fundamental aspect of warfare to improve the soldier's abilities in combat, whether it is through rigorous physical training, superior weaponry and defensive technology, or better strategy and tactics (Black, 2013). Where in early history the number of technological artifacts was relatively small, the number of technological artifacts used nowadays is tremendous and not only the amount, but the size of these artifacts, as well as their complexity has increased. The most significant changes came during the massive conflicts of the 20th century, the First, and Second World Wars, the Vietnam War, and both Gulf Wars as these conflicts introduced the most significant steps in industrializing warfare. Especially the first two conflicts were impressive, as the military became far more mechanized, and there was an increase in the use of machinery like tanks, machineguns, and airplanes, which includes both the production of these kinds of weapons and their deployment.

Blackmore (2011) describes the cruelties of warfare from several eyewitness accounts to show how the human body is no match for the power of mechanized warfare. He describes instances of soldiers evaporated by artillery shells, and bodies penetrated by shrapnel and bone fragments from their fellow soldiers. The skin is not up to the task of protecting the human body to this kind of violence, which illustrates the limits of the human body becoming more and more of a restriction in warfare that needs compensation through an increase in technological artifacts. As a result, the role of the human in the military system becomes smaller and smaller (Singer, 2010, p. 64). The mentioned effect is prominently seen in the rise of mechanized warfare in the 20th and 21st century and is the main reason for the military to invest in the enhancements of their soldiers. These investments make sure that the human soldier can keep up with technological developments, working around the restrictions of the human body (Singer, 2010, p. 63).

On the other hand, this does not mean that older military technology did not have an impact on the human body. Multiple studies on the skeletons of archers, archeologists discovered "activity-induced stress marks" (BBC, 2012; Tihanyi et al., 2015; Killgrove, 2015). The unique way of using the bow and arrow left stress marks on the bones of the arms and

shoulder. The examined skeletons also included children, showing that the usage of the bow and arrow started from a young age (Killgrove, 2015; Tihanyi et al., 2015).

However, as argued by Blackmore (2011), the human body is surpassed by technology, and it is, therefore, that the body has to be enhanced to keep up with the technology. "Up until today, each of the functions of war took place within the human body and mind. The warrior's eyes saw the target, their brain identified it as a threat, and then it told their hands where to direct the weapon, be it a sword, a rifle or missile. Now each of these tasks is being outsourced to the machine" (Singer, 2010, p. 78). The fear of outsourcing drives the development of enhancing the human, physically, psychologically, external, and internal.

Then if the technology is so widespread, how does it affect the soldier? When looking into what it means to be a soldier, the focus on concepts like honor and courage are often mentioned (Taraska, 2017). Throughout history, the "warrior ethos" is something that is continuously changing (Black, 2013; Blackmore, 2011; Coker, 2007; Singer, 2010; Taraska, 2017). The increase in the use of technological artifacts in warfare does not necessarily decrease the "warrior ethos." However, according to Singer (2010), it does affect the definition, as less courage is needed to pull the trigger when the soldier is not staring the enemy in the face. The more considerable distance makes that the soldier is connected less to the effects of his doing (Singer, 2010). The current way of warfare alienates the soldier from the experience of killing; distancing him from the emotion of the intensely human activity that is combat, the soldier is just managing a system (Coker, 2007).

As a result, the way the general public looks at the military changes, soldiers are not seen as brave men, fighting for a cause but more as "ordinary killers" (Singer, 2010, p. 204). The technology that modern soldiers use is credited for the soldier's achievement, as well as that the use of the technology becomes part of the warrior trait. Black (2013) describes the idea of the "glamour of the machine," which is most notable with ace pilots. "In particular, concepts of manliness and honor do not relate solely to hand-to-hand combat and physical strength, as they once did. Instead, man has also been linked to the glamour of the machine, notably with movement. This glamour has played a central role in the fascination with air power, a form of warfare in which the emphasis is on the individual combatant, not the reinforcing crowd, notably of ground crew and control staff, that is, in fact, crucial if aircraft is to operate at all" (Black, 2013, p. 270). Pilots were, in both the First World War and the Second World War, seen as the knights of the modern age. Ace pilots were highly glorified during this conflict and often put forward as examples of personal courage and chivalry and were seen as national heroes and celebrities (Coker, 2007, pp. 107-8).

Black (2013) argues that there is a growing gap between society and the military because of the increased media coverage of a war. The depiction of war changed through the use of media, and there is an increased emphasis on the victims. As a result, the general public wanted the casualties of war to be as low as possible. Thus, there has to be a way in order to keep the number of casualties as low as possible. Therefore, there is less need for a warrior who excels at his job of killing other people, and who "enjoys" killing. The profession of being a soldier has changed and became less popular; those who enlisted to become warriors came home disillusioned, changing the view on the warrior trait (Coker, 2007).

Honor is something that is not necessarily important to the soldier himself, as Blackmore (2011) states: "During the Second World War, the army learned that soldiers don't generally fight for abstract concepts like honour or democracy: they fight for each other, to protect each other, and to demonstrate to themselves and the group that they are worthwhile people" (p. 22). What can be derived from this is that the soldier himself in actual combat situations might not care at all what the effect of the technology is, as long as it helps the soldier to protect his fellow soldiers. Even if this fellow soldier is a machine (Singer, 2010), which is something that is not only applicable to modern warfare but something that resonates throughout the history of warfare.

The image of the soldier and the general public's view on the soldier affected the development of military technology and vice versa. The influence of technology on the soldier does not end here; the working relationship between the soldier and technology goes further, even to the point that they become intertwined.

2.4. The soldier as a cyborg

The introduction of this thesis states that human is a cyborg, which is one of the starting points for the argument made in this thesis. This subsection will go deeper into how this argument comes about. The previous subsections explained how human and technology are a part of warfare. Combined with the definition of the cyborg and the idea of the soldier as a cyborg becomes clear. The definition can be seen in two ways, first of all in a natural way of a merger of a human beings and technological artifacts, and secondly in a broader sense, as Haraway (1991) and Clark (2003) advocate it to be. Section 2.1 discusses several human enhancements that combine human and machine.

Examples of these technologies are the Brain-Machine Interface, cognitive enhancers, and genetic enhancements. These technologies make the right reason to call those soldiers who use these technologies cyborg. Technology does not have to be embedded in the human body in order to be considered a cyborg, which is what Haraway (1991) means when she says that the boundary between the human and non-human is very imprecise and that technology is very much a part of the human being. Other philosophers, such as Plessner (Coeckelbergh M., 2017), Clark (2003), Coeckelbergh (2017), Taraska (2017), and Verbeek (2011), mention this as well. With this in mind, those soldiers who may use a BMI in the future, or already use cognitive enhancers, can be considered cyborg, as well as those soldiers who use technologies like the haptic flight suit mentioned by Singer (2010). Clark's reason for calling the human being a natural-born cyborg is that the human's reasoning is already "spread across [the] biological brain and nonbiological circuitry" (Clark, 2003, p. 3). The human continuously uses technologies to improve its condition. Clark (2003) further states that the human body was built to be breached in order to cooperate with nonbiological sources, which can also be applied to the military, as has become evident in Section 2, as the soldier is highly immersed in technology. It goes further as it is applicable in multiple layers of the military, not only for the soldier, although he is the endpoint. However, also, on a bureaucratic, strategic, and tactical level of the military.

Section 3: The soldier and bioconservatism

This section addresses the bioconservatives' position and their approach to the enhancement of the soldier. The first subsection will explain what bioconservatism is and what they claim. The bioconservatives are a group of bioethicists that oppose human enhancement. Their main argument is that human enhancement threatens human nature. Although they all oppose human enhancements, the bioconservatives do not all agree with one another in the same way the transhumanists do. In Section 3.2, the human enhancements explained previously in Section 2.1 will be analyzed from a bioconservative perspective. Furthermore, the bioconservative position will be criticized from a postphenomenological perspective, in support of the leading research question and the core argument of the thesis, which is that the bioconservatives uphold a status quo of the human being and assuming a dichotomy between human and technology.

3.1. Bioconservatism

Bioconservatism can be seen as the opposition to human enhancement on the base that there is something intrinsically valuable in the human being and that human enhancements undermine this value. The fear is that in the human essence, there is "something" that will be permanently changed if the use of human enhancements and would be legally allowed. The bioconservatives want to prevent this from happening. Because the bioconservatives are not as organized as their philosophical opponents, they are therefore often defined by the transhumanists. Bioconservatives claim that human enhancement is wrong– qua process that could undermine something intrinsically valuable about being human – (we will call this the human nature claim), and the political claim that it should, therefore, be banned or severely restricted (Roache & Clarke, 2009, pp. 1-2). However, it is a bit more nuanced than this; there are a couple of factors that are important to the bioconservatives.

Kass (2003) provides three practical objections to human enhancement: safety, unfair advantages in competitive activities, and issues concerning freedom and coercion. The first objection is about safety. Science does not yet have enough knowledge to be sure that by enhancing "system A," "system B" will not be harmed (pp. 14-5). This human enhancement makes it a case of risk versus reward, a question one might ask is: Is enhancing oneself rewarding enough, to accept the risks that it might bring with it? Kass (2003) states that essential

health should not be at risk in order to enhance oneself. By enhancing oneself, there might be long term effects that are not yet discovered before the enhancement is brought onto the market; therefore, safety is difficult to guarantee. A transhumanist response to this issue would be that at the time a negative side-effect would appear, there will be a new piece of technology available that would cancel this adverse effect. However, this is a simple answer to an issue that might not be as easy as the transhumanists might think.

The second objection is that enhanced individuals in competitive activities have an unfair advantage in comparison to unenhanced individuals. The prime example here is the use of doping in sports or students using Ritalin to improve their studies (Kass, 2003; Sandel, 2007). This division between the haves and the have-nots leads to a focus of resources towards enhancement, where these resources could be distributed better (Kass, 2003, p. 15). Furthermore, there is the idea that biotechnical enhancements allow the user to cheat, to achieve certain things without the necessary effort. On the other hand, if the enhancement compliments an ability, it would not be considered cheating. As an example, Kass (2003) states that if a drug would further steady a surgeon's hand so he could do a better job, this would not be considered cheating (p. 22). For Kass (2003), this is the only exception, as the way to gain character is through hard work, as human beings admire those who have overcome obstacles to achieve their goals. Using enhancements would undermine the hard work of individuals.

The third objection, Kass (2003) has is that human enhancements lead to issues concerning freedom and coercion. If human enhancements become widely available, those who are unenhanced may become a victim of peer pressure to enhance themselves against their will. Alternatively, the case could be that governments help their citizens raise the bar with human enhancements, but simultaneously lowering the bar, homogenizing human society (p. 16). It also creates social control for those who are enhanced over those who are not enhanced. For example, companies might prefer enhanced persons over non-enhanced persons for their jobs, or schools that only allow enhanced children, or students to apply, which would impede the freedom of human beings and coerce them to enhance themselves. Again, these are three practical objections to human enhancement and do not go into the question of whether the human being remains human after the enhancement.

A bioconservative that does go into this question is Francis Fukuyama. He has a more intrinsic objection to why one should be against human enhancement. According to him, enhancing oneself would undermine the human essence. Fukuyama (2002) states that there is something about humans, which he calls Factor X, that needs to be there in order to approve something of being human. Factor X is a part of the human essence. The essential parts of this

factor X are human nature and human dignity. Both these terms bring much controversy with them as there is much disagreement surrounding them. Fukuyama (2002) defines human nature as "the sum of the behavior and characteristics that are typical of the human species, arising from genetic rather than environmental factors" (p. 130). As human nature, human dignity is also an intrinsic part of Factor X. Fukuyama (2002) describes Factor X as a redline that surrounds what is worthy of human dignity and what not. In order to support his argument, Fukuyama leans both on religious authority and other philosophers. He speaks about Kant's distinction of the human being, that what makes the human being unique is that it has a moral choice (p. 151). Furthermore, Factor X is non-reducible, meaning that it cannot be reduced to the fact that the human being has a moral choice, uses reason and language, has emotions and consciousness (Fukuyama, 2002, p. 171).

Fukuyama (2002) states that throughout human history, different groups were not recognized before as having human dignity, like for instance, women and black people, which raises the question of whether there is room for the enhanced person within human dignity somewhere in the future. Another question that can be asked with regards to human enhancement is what it is that bioconservatives want to protect from further development in biotechnology? Fukuyama's answer to this is: "…, we want to protect the full range of our complex, evolved natures against attempts at self-modification. We do not want to disrupt either the unity or the continuity of human nature, and thereby the human rights that are based on it" (2002, p. 172). Enhancements undermine these things as they deprive the human of its complexities. Human beings will deprive themselves of this Factor X if they enhance themselves because it would reduce the human's complexities (Fukuyama, 2002, pp. 172-3). According to Fukuyama (2002), the reason for this kind of thinking comes from an increasingly utilitarian view on biomedicine, which has to be maximized or minimized, an increase of "good" emotions and a decrease in "bad" emotions. Both these kinds of emotions are necessary to create character and to connect human beings. Human enhancements would simplify these emotions, making it not something that a human has to overcome, but take a pill to get rid of it (Fukuyama, 2002, pp. 172-3). These actions would simplify the human; in order to achieve something, one would only have to enhance themselves, instead of working for it and in the end, achieve their goal. Sandel further explains how the appreciation for people's achievements shift, from the person who acted as the technology that helped the person to achieve his or her actions. Instead of applauding the person who performed something, this achievement is gained through technology instead, which would lead to a diminished appreciation for that person's actions (Sandel, 2007, pp. 25-6).

A different argument against biotechnology comes from Michael Sandel (2007), who argues that biotechnology might not just reduce agency, but that a "hyper-agency" is gained from biotechnological enhancements. Sandel fears that this hyper-agency will push those who are enhanced even further in reshaping nature, as well as human nature. Both Kass (1997; 2003) and Sandel (2007) fear that this hyper-agency will lead to the destruction of the "appreciation of the gifted character of human powers and achievements" (Sandel, 2007, p. 27). Sandel therefore, argues that the "giftedness of life" should be seen as a boundary of how far one can go in human enhancement, and as a way to show that not everything in life is within the control of human beings (Sandel, 2007, p. 27). Kass (2003) acknowledges that it is difficult to sort the gifts. Which gifts should or could be improved through training, which gifts are to be accepted, and which gifts are to be opposed (p. 19)? Pushing the human to be as perfect as possible would be as dehumanizing as trying to make someone less than human. Kass (2003) leads this back to human dignity by stating that before humanity sets out to enhance themselves, they need to have apparent what aspects of being human humanity wants to uphold before humanity sets out to enhance itself.

Another metaphysical issue for bioconservatives put forward by Kass (1997) is that the human being loses control over the technology they develop and that it will slowly take over. The human becomes even more of a mean and even less of an end. The issue here is that the human itself becomes a human-made product, which is something negative since the human being does not have enough knowledge about itself; there is still much to learn about what the effects are of human enhancements. Enhancing one part of the human might damage another or enhance another part unintentionally, as their effects are mostly still unknown. Also, the human would be treated as a commodity (Kass, 1997). Kass further states that the human being is a complex and balanced being, a result of years and years of evolution, which could be undone by "any ill-considered attempt at improvement" (Kass, 2003, p. 18). Another argument Kass makes is that biotechnical enhancements apply directly to the human body and mind, without the understanding of the enhancement's workings (Kass, 2003, p. 22). As a result of human enhancements, this rhythm of life is distorted. The rhythm of being born, grow up, get children, grow old, and eventually die is changed. As well as the close relationships someone has in their lives. This lifecycle becomes distorted, especially with enhancements that increase longevity and enhancements that change the relations between humans.

Although bioconservatives are all against human enhancements, the way they oppose to it differs. There are two ways in which they object against human enhancements. First of all, there are metaphysical objections, and secondly, there are ethical and pragmatic objections to

human enhancements. Fukuyama (2002) bases his main metaphysical objection on what he calls Factor X, or human dignity and human nature, as they fear that human enhancement technology will threaten this notion. Human enhancement does this as it would blur the border of what is human and what is technology. Both Kass (1997; 2003) and Sandel (2007) are more pragmatic and argue that the prospect of perfecting oneself will inspire human beings to go further and further in their enhancement progress, where the giftedness of life provides a perfect boundary as of how far one should go in their enhancement. If human enhancement technology were freely available, the human being itself would become a means to an end, and not the end itself. Furthermore, through social pressure, those who cannot afford enhancements will be pushed to acquire them, in order not to become a social outcast.

3.2. The soldier as a human

With the bioconservatives' arguments laid out; the human enhancement technologies discussed in Section 2.1 are now subject to scrutiny through the lens of bioconservatism.

From Section 3.1, it became clear that bioconservatives have both intrinsic and practical objections to human enhancement. One of the things for bioconservatives is that it is still the human being in control of technology (Kass, 1997), this is something that is also of concern to some high ranked military personnel (Blackmore, 2011; Singer, 2010). They also claim that the human, regardless of technological developments, should always to be in control (Blackmore, 2011). Like in Section 2.1, Wilson's (2004) division of enhancements will again be used in this section.

By analyzing the technologies mentioned in Section 2.1 the way how bioconservatives see the dichotomy between the human and technology, as stated in the core argument becomes more apparent, as well as how the bioconservatives see the status quo of the human being.

3.2.1. External (bio)technical enhancements

With regards to external (bio)technical enhancements, there will be fewer issues for the bioconservatives. Since the human being itself and their dignity, as well as of the soldier's human nature, is not directly diminished. External biotechnical enhancements like the artificial limb, the exoskeleton, and the haptic suits mentioned in Section 2.1.1 would pose less of a threat to humanity as a whole from a bioconservatives' point of view. These technologies are

worn, and thus, the user can disconnect from the technology rather quickly. The only objection would be on the base of freedom and coercion. As soldiers might be forced by the military to make use of these technologies against their will and that there might be a social difference between those army units that use these kinds of enhancements towards those units who do not use external enhancements.

The main objections within this category of human enhancement are practical, but in the case of the BMI, it is also intrinsically, as it might require a brain implant. By adding technology directly in the body of the soldier, it would disrupt the human nature of the soldier as it could reduce the complexities of the human thought process to simple ones and zeroes, as the soldier's thoughts become part of a computer program. Also, the long-term effects of BMI usage are mostly unknown. There might be specific effects that influence the soldier's behavior long after the use of a BMI.

3.2.2. Internal biotechnical enhancements

Like in Section 2.1.2, internal biotechnical enhancements are divided into two subsections, namely the passive internal biotechnical enhancements and the active internal biotechnical enhancements. In these two subsections, the appropriate technologies will be analyzed through the lens of bioconservatives and whether they would agree on the application of these kinds of human enhancements.

3.2.2.1 Passive internal biotechnical enhancements

The bioconservatives are against this type of enhancement as it would combine human and technology. Since this kind of enhancement does not respect the human being as it is in its natural state, as human enhancement technology would be inserted in the human body (Kass, 1997). It furthermore lets scientist create something that might be beyond human since any long-term effects are still unclear. Note that the bioconservatives object to any enhancing effects, they might be more lenient towards therapeutic applications.

Passive internal biotechnology is the sensor already mentioned in Section 2.1.2.1; these sensors implanted under the soldier's skin can sense the soldier's bodily functions like their heart rate, oxygen levels. Although, this will not alter any of the soldier's biochemistry and therefore not much moral risk. It does provide information on the soldier to his superiors. Bioconservatives would be against the use of this kind of human enhancement as it would diminish the soldier's dignity as the soldier becomes quantified, and therefore more of a mean,

and not an end (Fukuyama, 2002). The soldier would be seen even more as a commodity to the military then they might be already.

3.2.2.2. Active internal biotechnical enhancements

As discussed briefly in Section 2.1.2.2, cognitive enhancers have been used by the military for a reasonable time. Both uppers, drugs to prepare the soldier before combat and to keep soldiers awake during long periods and downers, drugs are used to help the soldier relax and calm their nerves during, and after combat. Some of these drugs are cocaine, Dexedrine, and Modafinil (Kamieński, 2017).

The question here is whether the actions performed by a soldier under the influence of cognitive enhancers is truly theirs or not. Is it the soldier himself that is acting, or is it the drug? Some cases of drug use in combat results in soldiers not recognizing themselves in their actions, while under the influence of cognitive enhancers (Kamieński, 2017).

There is a danger that the soldier is not allocated to the actions he did, as he would not be able to do them if it were not for the use of human enhancement. As an example, a soldier could not learn courage if he would take a drug that would induce fearlessness (Kass, 2003, p. 21). As with athletes, the use of enhancing drugs would be considered cheating, even if there is no direct competition. However, there is an interesting conflict within the discussion of bioconservatism, as mentioned in Section 3.1, a surgeon that would take an enhancer that would further steady his hand would not be cheating, as the surgeon would have already gone through rigorous training to become a surgeon. Taking this example into consideration would result in the idea that the same would uphold in the case of the soldier, who, like the surgeon, would have gone through years of training. Taking an enhancing drug to further steady the marksman' hand would not sound unreasonable.

In the case of genetic enhancement, an objection would be that the enhanced soldier, when altered genetically, would become something no longer human, as the soldier would be deprived of Factor X (Fukuyama, 2002). Because of this, the soldier no longer has no other role in society than being a soldier, even if the army dismisses him for whatever reason. It would also mean that the soldier is made and no longer trained or selected for his skills, even more so than is currently the case with the various training regimes soldiers adopt. Here the soldier would be seen as a mean, and not as an end. Although it might be beneficial for the military to genetically enhance the soldier, to get them in a better than ordinary shape, the actions performed by the soldier are not the soldier's actions, but those of the genetic enhancement. When addressing the difference within the category of genetic enhancement, germ-line, and

somatic enhancement, the main opposition from the bioconservatives would be against the germ-line genetic enhancement. Although bioconservatives would condemn both uses of genetic enhancements, the use of germ-line genetic enhancement would mean that the enhanced children have no choice in this process. Of course, children never have a choice in the genes they get from their parents.

These few subsections have given an insight into how the bioconservatives interpret the human enhancements discussed in Section 2.1, which gave an example of how the bioconservatives interpret the human and the human's relation to technology.

3.3. Bioconservatism on the soldier as a cyborg

This subsection discusses the bioconservatives view on the human-technology relation, the dichotomy they uphold between the human and technology, and how adopting a status quo of the human being complicates the overall human enhancement debate. The discussion between the bioconservative and postphenomenological viewpoints add to the core argument. Which entails that the debating parties, the bioconservatives, and the transhumanists, use a false metaphysics and that by adopting a different metaphysics, the debate can be taken out of its stalemate.

Although bioconservatives acknowledge that it is all too human for human beings to strive for the best version of themselves, achieving this through biotechnical enhancement is not the way to do it. The reasons for this are that human enhancements would change the continuity of human nature by interfering through technology (Fukuyama, 2002, p. 99). In this statement, Fukuyama uses a different understanding of technology than the one that this thesis uses. Nevertheless, when humans enhance themselves, there is a chance that humanity will lose something that is an essential quality of the human being, which could also happen without the human being aware of it happening (Fukuyama, 2002). However, one of the essential qualities of the human being is the relation that the human being has with technology. This relationship was there at the beginning of the stone age. Hence the example of the dug-up spears given by Roland (2016) in section 2.2. Now, there is a difference between making spears out of sticks in order to hunt or kill human beings and genetically enhancing oneself in order to become stronger. The difference lies in the technological intervention and the impact the technology has on the human itself.

Fukuyama's repugnance towards human enhancements is based mainly on intrinsic objections, with support of some practical objections. By enhancing themselves, human beings would diminish the complexities of life, as they would cheat by using biotechnical enhancers (Fukuyama, 2002, p. 172). The aspects of life, like emotion and hardship, would become something of less value. "They [enhanced human beings] no longer have the characteristics that give us human dignity" (Fukuyama, 2002, p. 6). In this claim, two assumptions are distinguished. First of all, a status quo on what a normal human being is, and second, that the change from being an unenhanced human, to a wholly changed enhanced human beings, is a rapid transition.

The beginning of this subsection already stated that Fukuyama sees the human being as something that is continuously trying to perfect itself. Kass (2003) endorses this by stating, "By his very nature, man is the animal constantly looking for ways to better his life through artful means and devices" (p. 21). This acknowledgment already comes in line with all humans are cyborg premise proposed in this thesis, but there are two metaphysical mistakes made by the bioconservatives.

First of all, when discussing human enhancement technologies, bioconservatives minimize the relation between technology and the human being. Although human enhancement technologies make the physical boundaries between the human and technology more evident, the bioconservatives tend to ignore that the human has always used technologies to improve its condition and this is no different with human enhancement technologies. This ignorance is because bioconservatives uphold a dichotomy between technology and the human being. Where in postphenomenology, there is no boundary between technology and the human being, which makes the use of human enhancements less of an issue, as the human is continually enhancing its conditions.

Secondly, the bioconservatives assume a status quo. This status quo means that there is the assumption of a stable definition of the terms, human nature, and human dignity. Thus, the assumption that the human being has not changed since its first appearance on this planet. The bioconservatives contradict themselves in their reasoning, as both the bioconservatives themselves and Aydin (forthcoming) have already stated that this is not the case. Fukuyama's (2002) makes the notion of Factor X as an intrinsic part of the human being. Factor X is based on a substratum that is continuously changing. That means that there is no stable factor of what makes Factor X. This is where Fukuyama makes his metaphysical mistake, as it is a false claim that there is something intrinsically human, that they can define, that requires preservation.

Although they acknowledge the previously mentioned piece on the evolvement of humanity, it is still one of the fallacies in the bioconservatives' reasoning. The fear for human enhancements comes as a sudden dive into the unknown. Where in reality, this development would be something more gradually. In literature, none of the bioconservatives give a precise idea of in what kind of period this transition is bound to happen. The transition from a hunter gatherer society to an agricultural culture did not go overnight; this goes for pretty much every revolution in human society. Furthermore, these changes are not in any case, instantly global by nature.

Thirdly, although bioconservatives consider human enhancement as something one should not do, nevertheless, this line is thin, as it is okay to cross it if one does not meet the status quo or are not considered a "normal" human being. Kass states that it is allowed for a "97-pound weakling" to use steroids in order to compete with the better endowed (Kass, 2003, p. 22). This statement would likely be something Fukuyama would disagree with, as his objections are more intrinsic than the more pragmatic objections from Kass, but Sandel (2007) would disagree with this as well, as it goes against his argument of the giftedness of life.

Another such example is the "surgeon example" given by Kass (2003). If it is permissible for a surgeon to take an enhancing drug that would make the surgeon's hand even more steady, then the same argument could be used to say that a marksman can use enhancing drugs in order to steady his hand (Kass, 2003, p. 22). The other case would come from the discussion in Section 3.2.1, from which follows that external enhancements that the soldier could "just" wear would be permissible for the soldier to use from a bioconservative point of view (Kass, 2003, p. 23).

Again, it must be said that bioconservatives are not an organized group, unlike the transhumanists, which does not mean that they all share the same opinion. Nevertheless, the examples mentioned above show that at least Kass and Sandel would agree to the use of external biotechnical enhancements. They would also, under certain conditions, agree with active internal biotechnical enhancements. Thus, it seems that Fukuyama is mostly against the use of genetic enhancements since he bases his objections on the wrong metaphysics.

To conclude, this subsection discussed the dichotomy between the human and technology that is upheld by the bioconservatives. On the other hand, the position that is held by the bioconservatives is brought into discussion with that of postphenomenology in order to show how the discussion can be taken forward by adopting a different set of metaphysics, which will be discussed further in Section 5.3. Also, by dismissing a status quo for the human being,

the discussion can be taken forward as the development of the human being is taken as a continuous process, instead of taking a starting point that is not discreet.

Section 4: The soldier and transhumanism

In the previous section, human enhancements have been analyzed from the bioconservatives point of view; this section presents the transhuman position on human enhancements. First, the general view of the transhumanists will be explored; with their arguments for enhancing the human being, how this will create a better human being, and how this will be a natural course of action. In Section 4.2, there will be an analysis of the various categories of human enhancements that are explained in Section 2.1. Section 4.3 will conclude with a discussion between transhumanism and postphenomenology. In order to answer the main research question and support the core argument, this section will go into the transhumanists' arguments for enhancing humans. The core argument entails the transhumanists' assumption of a status quo of the human being where the transhumanists want to transcend from. However, since it follows from postphenomenology that there is no status quo of the human being, there is nothing to transcend from. Furthermore, transhumanists, like the bioconservatives, uphold a dichotomy between the human being and technology. This dichotomy is also something that is a false assumption on the transhumanist side.

4.1. Transhumanism

Transhumanism is a movement that sees that there is more potential to the human species then is currently shown and that the human can grow beyond its current being utilizing science and technology. Transhumanism is "the study of the ramifications, promises, and potential dangers of technologies that will enable us to overcome fundamental human limitations, and the related study of the ethical matters involved in developing and using such technologies" (More & Vita-More, 2013, p. 3). This way transhumanists hope to eradicate diseases and eventually become immortal. To enhance humans, they focus on sciences like biotechnology, information technology, nanotechnology, and artificial intelligence.

In its core, transhumanism is based on humanism (Bostrom, 2003a). Humanism understands itself as improving the human being through education and cultural development, transhumanism instead emphasizes science and critical reasoning as a way to learn from the world we live in, it can, therefore, be seen as a more radical form of humanism (Bostrom, 2003a; Coeckelbergh, 2013; More & Vita-More, 2013). It is Max More who first defines

transhumanism back in the 1990s. “The intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities” (More & Vita-More, 2013, p. 3). Transhumanism is a broader philosophy of life, where the human itself takes the initiative to progress towards a better future. Transhumanists do not consider human nature as the end of the line, but rather as a necessary stop along the way. The ultimate goal then is to enhance the human being with technology in such a way that the human can be considered posthuman (More & Vita-More, 2013, p. 4; Coeckelbergh, 2013). With the increase of scientific developments in the branches of biotechnology and artificial intelligence, transhumanists recognize that there is a potential danger in the development of new technologies; therefore, these dangers are also a field of study for transhumanists.

When considering human enhancement, transhumanists see human enhancement as a fundamental right for each human being. Every human being should be able to enhance themselves in order to become posthuman, which also entails that although there is a risk of specific enhancements becoming a trend, humans are free in their expression and free to enhance what they think is a necessary trait to have.

Bostrom (2005a) gives a reason for why humanity should invest in human enhancement in his “The Fable of the Dragon-Tyrant.” It tells the story of why aging should be cured in the form of a fairytale. In this fairytale, the role of aging is played by the dragon-tyrant. This dragon-tyrant demands the sacrifice of people in order to feed it. At first, people tried to fight it but eventually accept this dragon-tyrant as their ruler and no longer think about defeating it. The people also accepted that the suffering from the loss of a loved one is part of life. To stop this suffering, the anti-dragonists try to convince the king of the people to kill the dragon-tyrant. Eventually, they succeed in convincing the king to finance technology, and the dragon-tyrant is defeated. Bostrom (2005a) explains that it is not an argument for life extension per se, but rather that the human being has always pushed to extend the health-span as far as possible (p. 11), as aging is seen as a disease: a condition that should and can be cured. A proponent of this life extension is gerontologist Aubrey de Grey. He is convinced that it is possible to reverse aging during this lifetime. De Grey (2007) works on ways to prevent diseases in order to extend the human lifespan. This rejuvenation will make it possible to prolong life up till a thousand years. The first step is for people to see aging as a disease that can be cured. Some of the issues of aging, like senescence and atrophy, are curable, according to de Grey (2007). If the human succeeds, it would be the turnover, where the human being goes from being human to being

posthuman (Coeckelbergh M., 2013, p. 22). Bostrom (2003, 2005a) states that it is urgent to act on the proposition to defeat aging and that therefore, it is urgent to develop human enhancements. This prolongation of life would be beneficiary to the military as well, as soldiers with combat experience would be able to remain active for a more extended period. Which also means that there is more experience in the military that can be shared with newcomers.

On the other hand, there is a potential danger with newly developed technologies, which is of genuine concern to transhumanists. Transhumanists propose to analyze and test new technologies thoroughly, like Artificial Intelligence (AI) and genetic modification, before making it available to the general public (Bostrom, 2003; 2005b). Therefore, gradual progression is necessary. Roach & Clarke (2009) state that if the developments are gradual, it will receive less opposition, and it will gain more acceptance from the general public (p. 17). Buchanan (2011) further states that if the change towards being posthuman is gradual enough, what is now considered human nature will change to what will be considered posthuman nature (p. 71).

A concern on human enhancement proposed by Coeckelbergh (2013) is that the effects of human enhancements are not only applicable to the individual but also the rest of society (p. 34). Both Bostrom (2003a, p. 22) and Buchanan (2011) argue that the human enhancements transhumanism advocates are those that benefit not only the enhanced person but also society as a whole, which is not always taken into consideration by the opposition. Buchanan (2011) goes even further in saying that the concerns about human enhancement only helping the individual, is no argument against not developing human enhancement technologies.

When addressing the human values, Buchanan (2011) states that there are essential continuities, with these continuities, he implies values that apply both to human nature, as well as posthuman nature. “If the result of enhancement is ramped up versions of capacities, we now value, why wouldn’t we know how to value them” (Buchanan, 2011, p. 72)? Buchanan (2011) further states that the human is already capable of imagining standpoints beyond human nature. Therefore, if the right properties are enhanced, and even if the human would change radically, the human should still be able to judge what is right and what is wrong; “it [human enhancements] would equip us with a basis for making judgments about the good for posthumans” (Buchanan, 2011, pp. 73, italics in original).

In the discussion between transhumanists and bioconservatives, Broderick (2013) discusses Fukuyama’s bioconservative objections to human enhancements. Broderick wonders if human dignity is what defines a human being, then “why would this make a more-than-ordinary human being somehow less than human” (p. 431)? Moreover, although Fukuyama’s

likely answer would be that one's human politics rely on human dignity in order to grant someone human rights, this will imply that those who enhance themselves will not be granted human rights (Broderick, 2013, p. 432). Thus, enhanced human beings would not be included in politics. However, this still does not answer the question of whether a more-than-ordinary human being would be less than human; it just makes them different human beings. The question of whether or not an enhanced human could someday be included within human dignity would be answered with yes since human dignity seems to be an ever-changing phenomenon.

4.2. The soldier as transhuman

In this section, the human enhancement technologies discussed in Section 2.1 will be assessed from a transhumanist' standpoint. Which will be an essential part of this section as it will show how the transhumanists see human enhancement technologies and how these fit in their adopted metaphysics. As well as how the transhumanists' analysis ties into the core argument, which entails that the transhumanists make two metaphysical mistakes: assuming a status quo of the human being and assuming a dichotomy between the human and technology.

In most transhumanist writing, there is very little mentioning of the military. There are many human enhancements that are researched by both the military and the transhumanists. It is understandable though that transhumanism is not involved in the military, this is because transhumanism hopes to evolve the entire human species and are therefore not necessarily interested in the military gaining an advantage over its enemies.

Furthermore, transhumanism is a proponent of the individual right to enhance oneself, which is different within the military. Although soldiers are asked for their consent when involved in experiments, this is not always respected by the military. Taraska (2017) mentions a few cases where U.S. soldiers, under pretenses, were used to testing short- and long-term effects of LSD (pp. 111-2). Other examples mentioned by Taraska (2017) are experiments that exposed U.S. soldiers to several kinds of gas, with the prime example of mustard gas (pp. 108-10). The last example is the "Desert Rock" experiments, where U.S. soldiers were exposed to high doses of radiation in the 1950s, without consent (pp. 110-11).

Although both transhumanism and the military are in favor of human enhancements, their reasons and methods are different. For transhumanists, practical objections like safety and

consent are essential values, although this might not always be possible. This concern is shared with both bioconservatism and postphenomenology, but the way they deal with these concerns is different.

4.2.1. External (bio)technical enhancements

In Section 2.1.1 several ways of external (bio)technical enhancements are discussed, including exoskeletons, prosthetics, haptic suits for fighter pilots. From a transhumanists' point of view, such external biotechnical enhancements run into little or no moral objections. The main advantage of such human enhancements is that they can be removed from the body at any time; the user is in principle, not stuck with the technology.

All the mentioned technologies in Section 2.1.1 can be listed as positional goods, which is from a military perspective something beneficial, positional goods will be further elaborated on in the next subsection. On the other hand, since these technologies would mostly be used by military personnel, the fact that these technologies are positional goods does not necessarily pose a threat to the general public. It should, according to Clark, cause "cautious optimism" as it shows that human-technology mergers are not as unnatural as one might suspect (Clark, 2013, p. 125).

The externality of these human enhancements gives it a moral advantage, as these technologies are worn, the human being itself is not altered, so it does not necessarily cause physical change. The BMI, where it uses a brain implant, would not receive any objection from a transhumanist point of view, as long as the implantation and the use of it are safe for the user.

The use of these kinds of enhancements might create inequality between military units, but this is something already present within the military and having different units with different tasks is something that is normal in the military.

4.2.2. Internal biotechnical enhancements

Bostrom & Roache (2008) discuss physical enhancements, taking examples from doping in sports. In this discussion, why physical enhancements should or should not be allowed in sports, they mention the term "positional good." These are "goods whose value to those who have them depends on others not having them" (Bostrom & Roache, 2008, p. 129). Which from a military perspective is very important, as it would grant the military advantage over the enemy. However, for the general public, it could create a divide between those who can afford to enhance themselves, and those who cannot afford it. It further states that when an enhancement

has the potential to become a positional good, the less useful, it would be for society (Bostrom & Roache, 2008, p. 131).

These positional goods create inequality amongst society, as some can afford them where others cannot, which is related to how positional good is valued. Some enhancements would be valued higher than others, but to someone who is not interested in human enhancements, it means nothing. Positional goods relate to a person's place within a group, instead of their place outside another group. On the other side, when someone does not have access to certain positional goods because of inequality within society.

The inequality would go against what transhumanism stands for, having human enhancements available, and affordable for every individual. Enhancing soldiers would also create inequality within the military. Al-Rodhan (2015) fears a lack of cohesion in military units if there are units with enhanced soldiers and units with unenhanced soldiers (p. 2). Now, there is already inequality within the military, not only between ranks but also between units. Units like special forces receive more, and more specialized, training in comparison to, for instance, regular infantry, which has always been this way, as each unit has its task.

4.2.2.1. Passive internal biotechnical enhancements

In Section 2.1 the primary passive internal biotechnical enhancement is the implemented chip that can be used to monitor the soldier's vital signs (Geveke, 2016; Palmer, 2016), another such thing is the version of the BMI that uses a brain implant (Clark, 2013). For the transhumanist, these kinds of human enhancements pose little threat to the human being, as long as the technology itself is safe, and or removable. In the case of monitoring the soldiers' vital signs, the soldier is given the advantage to see where he could improve his fitness. However, this would not be an essential piece of technology to gain insights into this kind of information. It, therefore, does not create any real inequality, or other moral objection. As long as the soldier gives consent to the placement of the device, it could not do much harm from a transhumanist point of view.

4.2.2.2. Active internal biotechnical enhancements

While addressing active internal biotechnical enhancements, like cognitive enhancements, the transhumanist standpoint is a bit in the middle. It can go both ways concerning the authenticity of the user experience of cognitive enhancements, which means that transhumanism recognizes that cognitive enhancers can undermine the user's authenticity, but it can also improve the

users' experience. Bostrom & Roache mention findings of persons who find their real self through the use of Prozac (Bostrom & Roache, 2008, p. 133). However, Bostrom & Roache do recognize that it could also be the case that this does not, for some reason, add up. With that in mind, it would be odd to hear a soldier saying that he finds his true self while using a cocktail of caffeine, alcohol, and amphetamines. Another point Bostrom & Roache address, concerns Modafinil, as it not only improves attention, but it also improves thinking power, which could have a positive effect on soldiers. The increased intelligence could make it easier for soldiers to gain insights in dangerous situations and better understand new situations and environments, which could result in better decisions (Bostrom & Roache, 2008).

However, these cognitive enhancers come with several moral issues; one of these issues is safety (Bostrom & Sandberg, 2009). Cognitive enhancers like methamphetamines and Modafinil were initially intended for other purposes; the increased cognitive capabilities are a side effect. Therefore, the safety of the user cannot be guaranteed, which would be something not only in need of study but makes clear that by developing drugs with the specific objective of enhancing one's cognition could be helpful (Bostrom & Sandberg, 2009, pp. 322-23). This study would make the use of cognitive enhancers safer. On the other side, there are still unclarities about the long-term effects of cognitive enhancement drugs, which can potentially impede the safety of these drugs.

Another possible worry concerning the use of cognitive enhancers is hyper-agency, a worry mentioned by Michael Sandel, where the increased cognitive capability will also result in increased responsibility and desires. Bostrom & Sandberg refute this argument since it is unknown how humans will respond to the increase of cognition and the increase in responsibility. Furthermore, they state that human agency is already interfering with the natural order, and often for the good. Thus, first, there needs to be some proof of human interventions that are bad (Bostrom & Sandberg, 2009, p. 327).

There are also other ways of cognitive enhancements, next to the more conventional ways like drugs. Bostrom & Sandberg (2009) discuss more unconventional forms of cognitive enhancement like neural implants and genetic enhancement.

In the case of genetic enhancement, there are two options, as mentioned in Section 2.1.2.2. The somatic and germ-line genetic enhancement. The first targets the somatic cells and therefore, does not harm any offspring. This way, the genetic enhancement would be the best way for the military to enhance its soldiers. However, for the transhumanists, the germ-line genetic enhancement is even more exciting than somatic genetic enhancement, as they are more interested in the enhancement of the entire human species. The transhumanists would ultimately

favor both forms of enhancement as the somatic genetic enhancement would allow a person to change themselves to their liking.

When considering positional goods and equality, cognitive enhancing drugs are something that would probably be cheaper than cognitive enhancement through genetic enhancement, which means that the technology is more likely to become a popular product, making it less of a positional good.

To conclude, the transhumanists would not have any problems with genetically enhanced soldiers, as they are proponents of both forms of genetic enhancement. For the soldier himself, the only thing that might be upsetting is the irrevocability of the genetic enhancement. However, according to Bostrom (2003b), this should not be a problem since future technologies, or genetic enhancements should be able to undo the changes the genetic enhancement did to the soldier, or other persons for that matter (p. 504), which seems a rather simple answer for something as complicated as genetic enhancement. Therefore, the picture painted by the transhumanists is way too simple. Many uncertainties surrounding genetic enhancements and the results of its use are almost always uncertain, which means that using similar technology to undo such a change would have double the uncertainty. These uncertainties are a considerable risk that comes with genetic enhancement; therefore, the use of a dedicated drug for cognitive enhancement would be safer as the effects would be more predictable, and in most cases, temporary.

These subsections gave an insight into how transhumanists interpret the human-technology relation, as well as how they see the human being as a status quo, from which they can move away from.

4.3. Transhumanism on the soldier as a cyborg

As mentioned in the introduction of the thesis, both transhumanism and bioconservatism assume a dichotomy between human being and technology. This dichotomy is one of the core arguments against both these parties, as it is a metaphysical choke point in the debate on human enhancement. Another metaphysical fallacy the transhumanist make is that of the status quo of the human being. The transhumanists use the status quo as a starting point, from which the human can transcend. This subsection will go into the transhumanists' idea of the status quo as mentioned earlier, and the dichotomy and why they are wrong.

Where the bioconservatives do not want technology to cross this dichotomy, the transhumanists encourage it. According to the transhumanists, the human evolution is ongoing, and even as nature got the human as far as it did, now is the time for the human being to take means into its own hands and decide where the evolution of the human being will go next. The goal for transhumanists is to become posthuman and to achieve this; they want to enhance themselves in a thoughtful, careful, and bold manner (More & Vita-More, 2013, p. 4). This way transhumanists make it sound like enhancing the human being is something newly invented, a new innovative way to propel the human being into the future. This reasoning neglects the many centuries, the human being has been enhancing itself.

The transhumanists state that a human who enhances itself will become posthuman, a better version of the human being, with fewer negatives of being human and more positives. According to Buchanan (2011), this transition from what is now considered human nature would go gradually enough; it would then be considered posthuman nature, without it being too noticeable (p. 71). Except for the assumed status quo on the human being here, Buchanan is right in stating that the process would be something gradually as the development of technology is not something instant, although in some cases it might seem so.

It is in the part of becoming where the transhumanists make the mistake of assuming a status quo. Bostrom (2003b) states that "Transhumanists hope that by responsible use of science, technology, and other rational means we shall eventually manage to become posthuman, beings with vastly greater capacities than present human beings have" (p. 493). It is this process of becoming that is greatly valued by the transhumanists. Bostrom (2005b) who argues in favor of a posthuman dignity, as an alternative for human dignity, clearly distinguishes between the unenhanced and the enhanced human being. Savulescu (2004), who sees the genetic enhancement of children as a moral obligation, states that humanity has either two options; to enhance, or not to enhance. Of which the first is the only logical answer to him: "To most of us, the choice is obvious. To be human is to be better. Alternatively, at least, strive to be better" (Savulescu, 2004, p. 39). However, even more moderate transhumanists like Buchanan (2011) argue that even if the human being changed rapidly, the human would not lose its ability to judge normal humans' values, as it would be odd to think that there would not be any continuities between the human and the posthuman (pp. 72-3). Buchanan goes further in stating that if the transition were gradual enough, it would lead to human nature becoming the posthuman nature (Buchanan, 2011, p. 71). The mistake made here is that there is an assumption of a transition, but there is no transition between human nature and posthuman nature as this is based on the metaphysical mistake of the assumed status quo.

Although the premise that all humans are cyborg seems to favor transhumanism, this is not the case. It is the place where the transhumanists make their metaphysical mistake. Transhumanists want the human to become better than human; they assume that there is such a thing as an average human which they can transform from being human to being posthuman. Instead of becoming, human beings are already a cyborg. Thus, there is no "becoming" a cyborg as the human being is already is a cyborg. There is no ordinary human being to move away from. Buchanan (2011) is wrong in this case in saying that human nature evolves in posthuman nature, as there will be no change in human nature. Alternatively, even, there is no human nature as it is based on false metaphysics.

Another interesting thing to note is that when addressing transhumanists' literature, there is little to no mentioning of the term cyborg. This lack of the term cyborg is because although in some cases, being transhuman and being a cyborg is related, it is not the same according to transhumanists as the transhuman has the intention to push human evolvement forward. As mentioned in the introduction, transhumanism describes a way to become posthuman. This intentionality is not there in case of the cyborg. The cyborg is a merger of the biological and the non-biological, without the purpose of helping the human species forward (Vita-More, 2012, pp. 14:25-17:03). However, this response assumes a different definition of the cyborg than which given at the beginning of this thesis. Therefore, the cyborg is not considered a part of transhumanism or posthumanism.

Why would this response be of any use for the thesis? Well, the case of the human being as cyborg means that the human being is coshaped by technology. By considering this, there is not much difference between being posthuman and being a cyborg. Although both entities imply an enhanced human being, the difference is that the posthuman would be without any of the human's limitations, which understands itself as an improved human being without all of the human's downsides.

Another flaw of transhumanism is in their firm belief that technology will solve everything. This so-called technopositivism is found in their refutations of arguments against genetic enhancements. In these arguments, their response to the irrevocability of genetic enhancement is that when a genetic enhancement is unwanted, another genetic enhancement can quickly solve this problem, which is an easy answer on a matter that might prove not to be so easy. While a genetic enhancement may enhance system A, it might damage system B, and could even enhance or damage more than those two systems, which means that there are multiple problems to be solved from just one genetic enhancement. Therefore, the need to inquire about these effects during the development of technologies might prove a way forward.

Transhumanists argue too quickly that life as posthuman being would be better than that of a regular human being because the vulnerabilities of ordinary humanity are minimized. However, the chance is that with being posthuman brings along issues that are related to being posthuman (Coeckelbergh M., 2013, p. 22). There is an inevitable unknown about what the future holds, which is something that the transhumanists tend to ignore, or state that it will be solved by technology in the future. The transcendence of the human is deemed so crucial that the unknown unknowns are ignored. This subsection adds to the core argument by pointing out where the transhumanists make their metaphysical mistakes. They assume a status quo for the human being, as well as a dichotomy between human and technology.

Section 5: The soldier and postphenomenology

Postphenomenology is a philosophical way of thinking that succeeds phenomenology, in the way "that [it is] motivated by the postmodern aversion to context-independent truths and the desire to overcome the radical separation of subject and object" (Verbeek, 2005, p. 113). The overcoming of the subject and object dichotomy is most influential in the studies of Don Ihde and Peter-Paul Verbeek. Postphenomenology states that there is no dichotomy between technology and the human being; therefore, both technology and the human affect each other in how they interact with the world around them, which not only holds for everyday technologies like glasses, or the thermometer, but also for the technology invested military. In Section 5.1, postphenomenology will be further explored with an explanation of terms and concepts brought over from phenomenology and Verbeek's advocacy for a new kind of ethics and followed in Section 5.2 by the analysis of the technologies discussed in Section 2.1. This section will end with a more detailed answer to the main research question proposed in the introduction, as well as an explanation of why postphenomenology poses a way forward in the human enhancement debate.

5.1. Postphenomenology

Postphenomenology is an expansion of phenomenology propagated by Peter-Paul Verbeek who bases his work on work from amongst others Don Ihde, Martin Heidegger, and Bruno Latour. It claims that both technology and the human affect each other's behavior, the exciting thing is that both the human and technology are without essence and thus dependent on the context from the world in which they appear. Technology is not a neutral thing present in the human world; technology actively changes how human beings interact and perceive the world. By using technology, the human subscribes to a sure way to utilize technology, which creates a "technologically mediated intentionality" (Verbeek, 2005, p. 116).

As mentioned, Don Ihde's philosophy of technology lays at the base of Verbeek's mediation theory. Don Ihde interprets technology through the lens of phenomenology, Verbeek temps to broaden this view on technology with postphenomenology. Traditional phenomenology describes the world as the human being perceives it, and an important thing here is that it looks at the "relations between human beings and the world" (Verbeek, 2005, p.

108). This relationship leads to the question of how to interpret the term "world." Verbeek (2005) describes "world" as "[…] "reality as disclosed by human beings"; the world-for-humans that arises when they act and experience it" (p. 108). Thus, the only reality is the reality of how humans perceive it. According to Verbeek (2005), this gives a more authentic description of reality and focusses more on the relation between the human being and their world.

The relation between the human and the world is at the center of postphenomenology, which includes technologies or artifacts that are either ready-at-hand, as well as present-at-hand since technologies that are not active, can still affect the human. The difference between the ready-at-hand and present-at-hand is that the user of the artifact in the first case is "unaware" of the artifact itself. The artifact's functioning is taken for granted. An example of this is the hammer. While using the hammer, the focus is on the nail and not on the hammer. The state of ready-at-hand is often given to tools. In the case of present-at-hand, the attention is drawn to the actual artifact, which happens, for instance, when the hammer breaks down, in this case, the hammer itself requires attention. This readiness-to-hand plays an essential role in the human-world relation, as it counts for any technology to the human's exposal (Verbeek, 2005, p. 114). Artifacts play different roles; some artifacts that are withdrawn from direct human perception can still affect the human-world relation. These different roles of readiness-at-hand direct to the different human-technology relations shown in figure 1.

The addition of postphenomenology to classical phenomenology is that the human and technology are not just intertwined, but that object and subject, technology and the human constitute each other. "A train coshapes how a landscape is present to human beings, a telephone coshapes the way human beings relate to each other. Things, therefore, are not neutral "intermediaries" between humans and the world, but mediators: they actively mediate this relation" (Verbeek, 2005, p. 114). By "coshaping," Verbeek means that technological artifacts like the mentioned train, and telephone, are an active part of how the human perceives the world and the human's relation to this world. Ihde calls this technological intentionality. Certain technologies have a specific directionality to them, a way to use specific technologies. Verbeek (2005) gives an example of the fountain pen and the word processor. Where the latter directs the user to write quicker as it is easier to correct things in comparison the fountain pen, with which every word on paper is permanent (pp. 114-16). Both technologies encourage a particular kind of use. Verbeek (2008) later expands on this intentionality with the phenomenon of cyborg intentionality, which will be addressed later on in this section.

The aforementioned “coshaping” is crucial as it is the difference between classical phenomenology and postphenomenology. Technology and the human being are not only intertwined, but also coshape each other, and humans can only experience reality in the way that reality is to the human itself (Verbeek, 2005, p. 112).

Another notion introduced by Ihde is that of multistability, this means that there is not just one function for an individual technology and that this function depends on the relation of the individual human being to the particular technology. The function of an artifact can change if it is used in a different context. Verbeek (2005) describes why technology is context dependent: “Just as perception can be understood intentionally only as of the perception of, and consciousness only as consciousness-of, so technology can only be understood as technology-in-order-to. The “in order to” indicates that technology solely function in concrete, practical contexts and cannot be technologies apart from such contexts” (p. 117). Which means that technology and its function can be unique for each and context it is used in and therefore has no essence in itself. Furthermore, without the human-technology relation, all technology would be meaningless junk, which is in contradiction with the view of technology as something neutral in itself, and that there is no intentionality in technology.

To go further into the relationship between the human being and artifacts Ihde distinguishes two different perceptions of experience: the micro-, and the macroperception. Microperception can be understood as the sensory perception done by the human body’s senses. The macroperception can be understood as an added context to the Microperception “contextual dimension of experience” (Verbeek, 2005, pp. 122-23). Thus, the Microperception is experienced within a Macroperception. The Macroperception gives information on, for instance, whether the experience is something good or bad. For example, one can feel warmth, which could be both a good thing and a bad thing; the experience depends on the Macroperception. Feeling warmth may be a good thing if one is laying on a sunny beach, but bad when one would be in a burning building. The thing is with these perceptions that although they are two different things, they cannot be separated. This sidestep towards perception and experience is needed to introduce the mediation between the human being and technology.

Don Ihde describes four different kinds of human-technology relations: embodiment, hermeneutic, alterity, and background relations. Figure 1 visualizes these different human-technology-world relations.

embodiment relation	(human – technology) → world
hermeneutic relation	human → (technology – world)
alterity relation	human → technology (- world)
background relation	human (– technology – world)

Figure 1: Human-technology relationships (Ihde 1990), as cited in Verbeek (2008).

In the first human-technology relation, the technology is embodied; this means that the technology enhances or assists the human to experience the world. Glasses, for instance, help those with poor eyesight to regain a sharp vision, another example would be the blind man's cane. Through the use of the cane, the blind man can perceive the world (Verbeek, 2005, pp. 125-26).

In the hermeneutic relation, technology changes the representation of the world. Unlike the embodiment relation, the technology in the hermeneutic relation is not transparent; it is an artifact that must be "read" (Verbeek, 2005, p. 126). The example given by Verbeek (2005) is that of the thermometer. Through the thermometer, the warmth felt on the skin becomes quantifiable; it gives a representation of the world (p. 126). The difference in experience between the embodied relation and the hermeneutic relation is that in the second case, the world is translated in something quantifiable.

The third relation is the alterity relation. This relation is not through an artifact, but rather to or with the technology. Instead, the technology is seen as how a human being would see another human being, something to physically interact with, e.g., an ATM or a faucet (Verbeek, 2005, pp. 126-27). The difference between the previous two human-technology relations is that the human actively and physically interacts with the artifact in order for it to work. In case of the ATM: the user inserts a debit or credit card; the ATM asks for a pin code in order for the user to withdraw cash. This example shows that it requires some interaction with the artifact in order for it to work.

The fourth relation is that of the background relation. Like the name suggests the technology is present in the background of the human's experience. The technology is not explicitly experienced and instead shapes the context of the experience (Verbeek, 2005, p. 128). One of the examples Verbeek gives for this relation is that of central heating. One is not always, or actively experiencing, or interacting with it since it turns itself on, and off. However, it is still there, and it does influence the experience of living in a warm or cold home.

Verbeek (2008) adds a fifth human-technology relation to the four-existing ones. This fifth human-technology relation is the cyborg relation. In contrast with Ihde's previously established human-technology relations, in the cyborg relation, "the human and the technological are merged into a new entity, rather than interrelated" (Verbeek, 2008, p. 390).

Cyborg relation	(human/technology) → world

Figure 2: The cyborg relation

The cyborg relation creates intentionality that is not purely human; the human is merged directly with technology, which affects the human's intentionality. The human's intentionality is taken "beyond the human" by the mediating technology. A prime example of this would be when someone is under the influence of drugs; their actions are not purely their own but are influenced by the drug. However, also implanted technology could be ascribed to the cyborg relation, technology like deep brain stimulation. Although this seems similar to the embodied human-technology relation, Verbeek (2008) explains that the difference lies in the fact that in the embodied human-technology relation there is a clear distinction between the human and the technology, where there is no such thing in the cyborg relation.

When discussing human enhancements and whether it is ethically sound or not, Verbeek (2011; 2014) tries to place postphenomenology between the two opposites of bioconservatism and transhumanism. The core difference is that both bioconservatism and transhumanism assume a dichotomy between the human being and technology (p. 117). Although Verbeek (2011) agrees with the notion that the human should not just enhance themselves any way they can, he does state that ethics should not focus on drawing a line between the human and technology, but rather develop a new ethics that takes into account that there is no dichotomy between the human and technology (p. 119). Verbeek (2011) states that "We have to go through Scylla and Charybdis, I would say, and develop ethics that aims to entrust people with technology in a responsible manner" (p. 118). Instead of doing the assessment externally, the assessment of the technology should be done internally. This way, the technology can be assessed from up close, so the new experiences, dilemma's, and practices can be guided into the way it is intended. It is focusing on the improvement of the quality of life of the technology's potential user, which requires close cooperation between ethicists and technicians. This self-constituting ethic that Verbeek (2011) advocates create room for the human being to take responsibility for the handling for the technology that is currently at our disposal (p. 129).

5.2. The soldier as posthuman

This subsection will go into the human enhancements discussed in Section 2.1 from a postphenomenological perspective. The subsection adds to the core argument that the bioconservatives and transhumanists make the two metaphysical mistakes of assuming a status quo for the human being, as well as a dichotomy between the human and technology. By adding the postphenomenological point of view on the human enhancements discussed in Section 2.1, the way that postphenomenology will take the debate further will become clear. According to Verbeek (2011) and Aydin (forthcoming), both bioconservatives and transhumanists think too lightly of the human-technology relation. The a priori predictions made by those parties on how human enhancement technology would work out in practice will not hold (Verbeek, 2011, pp. 26-7; Aydin, forthcoming, pp. 10-1). Especially in a branch that is such heavily invested in technology as the military, the outcomes of the implementations of human enhancement technologies are hard to predict.

Questioning the dichotomy between humans and technology is essential when assessing human enhancement technologies, as will be made clear in the next subsections (Verbeek, 2011, p. 126). Furthermore, Verbeek (2011) suggests an ethic that finds a way to entrust the human to technology (2011, p. 118). He wants to do this through the "ethics of the good life," this way ethicists stand amongst technology, instead of on the sideline, which allows ethicists to asses technology more closely, and makes sure that emerging technologies are embedded in society in such a way that it does not harm society (Verbeek, 2014, pp. 160-61).

5.2.1. External (bio)technical enhancements

Amongst the external (bio)technical enhancements discussed in Section 2.1.1, amongst these technologies are prosthetics and exoskeletons, as well as haptic suits that allow pilots to "feel" their aircraft. These kinds of human enhancements have an embodiment human-technology relation to its user. The haptic suit allows the pilot to "feel" his aircraft; therefore, the pilot's experience of the world is altered through the technology. When addressing ethics in postphenomenology, Verbeek (2014) notes that there is morality not only in the user of the technology but also in the technology itself. One example Verbeek (2014) gives, is that of the gunman. Even in language, the subject and object are connected. The example of the gun, mentioned by Verbeek (2014), consists of the words gun and man, which means that there is combined intentionality in the being of the gunman (pp. 80-1). In the case of the external

technical enhancements mentioned in Section 2.1.1, this means that when assessing the morality of the soldier, one has to take the exoskeleton and the haptic into account suits as well.

Another exciting technology discussed in Section 2.1.1 is the Brain-Machine Interface (BMI); this technology can be used to control computer systems with the mind. This technology implies that a person can control prosthetic limbs through a BMI system, but it can also be used to control robots. There are two ways to implement a BMI, either by headset positioned on the users' head or through the use of a chip, implemented in the users' brain. These two options make the difference between which human-technology relation between the BMI and its user is applicable. Where it in the first case is an embodiment relation, and in the second case, it becomes a cyborg relation, as the chip becomes part of the users' body.

For the ethical assessment of technology, one has to consider the human-technology relations, the well-being of the user, and auxiliary effects of the technology. The exciting part is the military technology, in contrast to civil technology as this is not discussed by Verbeek (2011, 2014). Well-being is less of a concern for the military because they develop technology for different kind of reasons. The military does not always take the well-being of their personnel into account either, as Taraska's (2017) examples have shown in Section 4.2.

5.2.2. Internal biotechnical enhancements

Like in the previous two internal biotechnical enhancement sections, the internal biotechnical enhancements will be divided into two separate categories, as suggested by Wilson (2004). The passive and active internal biotechnical enhancements are discussed separately. These kinds of human enhancements prove to be more interesting to discuss, also from a postphenomenological perspective, which has to do with the human-technology relation. Where the embodiment relation applies for the external biotechnical enhancements, the cyborg relation applies to the internal biotechnical enhancements. In the case of the external biotechnical enhancement, the human wears the enhancement, and it is possible to undo the enhancement from the body. In the case of the internal biotechnical enhancements this more difficult, as the human being is in a literal sense merged with technological artifacts.

5.2.2.1. Passive internal biotechnical enhancements

The primary passive internal biotechnical enhancement mentioned in Section 2.1.2.1, is an embedded chip that can monitor the soldier's vital signs. This technology has a hermeneutic human-technology relation, since it quantifies the soldier's vital signs, making it possible for

the soldier himself and his superiors to keep sight on this data (Geveke, 2016; Palmer, 2016). The chip's workings would raise moral issues if applied to the soldier without the soldiers' consent, but also for the idea that the human is quantified and that soldiers would only be seen as data.

Furthermore, if there is something wrong with the device removal should be an option, which is also something that should also be done after the soldiers' service, this may not be as simple with other human enhancements.

5.2.2.2. Active internal biotechnical enhancements

The two active internal biotechnical enhancement discussed are a cognitive enhancement in the form of drugs and genetic enhancement. In the drug form, these cognitive enhancers give an instant result by actively changing the biochemistry of its user. In the military context, there are a couple of prominent examples alcohol, cocaine, heroin, amphetamines, and Modafinil (Kamieński, 2017). However, there are other forms of cognitive enhancements, like genetic enhancement. When soldiers do drugs in combat[3], they are merged with the drug and are therefore cyborg. The drug mediates the 'soldier's actions after taking the drug, thus, there is a case of cyborg intentionality. The use of drugs is also one of Verbeek's (2008) prime example when discussing cyborg intentionality. This intentionality is interesting primarily when it seems that the drug is taking the upper hand in this cyborg relation. Taraska (2017) discussed a case where the military exposed a soldier to LSD for an extended period. This soldier has molested his wife during nighttime, with no recollection of the event in the morning (pp. 111-12). Kamieński (2017) provides another case. In this case, U.S. fighter pilots accidentally bombed Canadian soldiers. The pilots were under the influence of Dexedrine during this event, which they used as an excuse in their defense in the court case that followed the event (pp. 360-61). Moreover, although the pilots lost the court case, the influence of the drug is something that should be taken into consideration in such cases especially since the usage of the Dexedrine was common among pilots (Kamieński, 2017, pp. 359-62).

The question who is responsible can be asked, are those who take the drug responsibly, or is the drug as responsible for the actions as the user who took them? In order to prevent such incidents from happening again, cognitive enhancers in the form of drugs would need to be

[3] This counts for anyone doing drugs of any kind.

more specifically designed to keep the soldier awake and alert, without any side effects like becoming overly aggressive and, or addicted to the substance.

Another active internal biotechnical enhancement discussed in Section 2.1.2.2 is a genetic enhancement. Genetic enhancements categorize as a cyborg relation since the technology is put inside the human body, but unlike with the other active internal biotechnical enhancement, the effect is long lasting and irrevocable. The two different methods for genetic enhancement, germ-line and somatic genetic enhancement, make it difficult to predict what the enhancement might do over a long period. Especially for the germ-line variant, as this is given on to the next generation. Therefore, it is crucial to monitor the development of human enhancement technologies like genetic enhancements, since the effects can go in many directions, including directions that were not anticipated, or intended. This issue is something that should be taken into account if one would like to implement genetic enhancement. There should be rigorous testing before such a technology can be used on human test subjects, as the harm that it could do to the subjects is unknown, either for short-term or long-term issues. Although genetic enhancement, and primarily somatic genetic enhancement, is attractive to the military, the implication may turn out differently than intended and therefore, it is the most unpredictable human enhancement in this thesis. Also considering that any side-effects might not be noticed, even after the soldier leaves the military.

These subsections added the postphenomenological perspective to the human enhancement technologies discussed first in Section 2.1, which complements the core argument that the bioconservatives and the transhumanists make metaphysical mistakes to assume a status quo for the human being, as well as a dichotomy between the human and technology by showing an alternative way of analyzing these technologies.

5.3. Postphenomenology on the soldier as a cyborg

Sections 3.3 and 4.3 went into how both bioconservatism and transhumanism are flawed in their ideas about human enhancements, assuming a dichotomy between the human being and technology, as well as assuming a status quo on the “normal” human being. This section will go into how postphenomenology can pull the discussion on human enhancements between bioconservatism and transhumanism out of its stalemate and how postphenomenology can provide a way forward in the discussion.

First of all, Aydin (forthcoming) criticizes transhumanists on the notion that they, like their counterparts the bioconservatives, assume a status quo, which is a problem as the transhumanists use this status quo as a base from which to transcend. The transcending from this status quo is something they greatly value, hence the name transhumanism. The same goes for the bioconservatives, as the status quo is what they are trying to protect. Aydin (forthcoming) states that both parties take the starting point of a "normal" human being and that this "normal" human being is unchangeable. He further mentions how Nietzsche states that the human is undefined, the human has always been improving one's condition, which means that the human is always enhancing itself in any way possible (Aydin, forthcoming, pp. 14-5).

The discussed human enhancement technologies in this thesis make it more evident that the human being is enhancing itself, which does not mean that the human should stop doing it (Verbeek, 2011; Coeckelbergh M., 2017). Furthermore, it is not strange for human beings to enhance themselves, as it is a natural course of action; the human being has done this since its first existence. Thus, in contrast with the bioconservatives and the transhumanists, who state that there is a status quo on the human being, Aydin (forthcoming) states that there is no such thing as a status quo and therefore the human will remain human, even if it enhances itself. By making this statement, postphenomenology dissolves the question of whether a human being remains human if he enhances himself. This answer puts an end to the stalemate since the wrong metaphysics is at the base of the discussion. Instead, the discussion on human enhancement technologies should focus on the more practical issues at hand, such as safety and coercion.

Secondly, by assuming the broader definition of the cyborg, the term posthuman can be neglected, as both terms imply an enhanced human being. Verbeek (2011) is still a bit careful with these terms, discussing transhuman, posthuman, and cyborg separately, while they all end up as an enhanced human being. Furthermore, adapting the definition of the cyborg, as stated in the introduction of this thesis, all of the human-technology relations given by Don Ihde (Verbeek, 2005) and expanded on by Verbeek (2008), (see figures 1 & 2) can be put under a single banner of cyborg relations. The human as a cyborg premise is also the place where using postphenomenology in a military context becomes interesting. In the military, the soldier is already enhanced in multiple ways, as explained in Section 2. It is in the military context that looking at the real practical issues of human enhancement becomes relevant instead of arguing whether the soldier remains human or not. The military instead focusses on how to get the edge over the enemy. By analyzing the issues found in the development of military human enhancements through postphenomenology could also provide new insights in how these

human enhancement technologies could be analyzed if they appear in the civilian context. The analysis of the military could then also function as a benchmark.

Postphenomenology is context dependent, and as the military is bound to a particular set of rules, it is possible to say that the military has a higher risk acceptance concerning human enhancements than any other context. Concerns like positional goods and inequality are no issue for the military like mentioned before, quite the opposite holds, which means that the military is far more willing to experiment with human enhancement technologies, which shows in the mentioned human enhancement technologies discussed in this thesis.

Thirdly, postphenomenology provides several new ways of analyzing and assessing upcoming technologies. Section 5.1 discussed these tools, coshaping, micro-, and macroperception, and multistability. These tools can help when assessing emerging (military) technologies.

An excellent example of this way of analyzing technology is with two of the human enhancement technologies discussed in this thesis, which are the least and the most heavily debated technologies, namely the exoskeleton and genetic enhancement. As an external biotechnical enhancement, the exoskeleton is a piece of equipment that is worn by the soldier. Only by wearing the exoskeleton does it alter the soldier's experience and does the soldier benefit from it. However, as the exoskeleton is under development, the capabilities of the exoskeleton would increase over time.

The microperception does not change that much for the soldier as the exoskeleton, does not alter the soldier's sensory input. However, the perceived distance a soldier can walk, or run, as well as the load a soldier can carry, are increased. Therefore, the macroperception becomes smaller, as walking vast distances and carrying heavy equipment is not thought of as the same obstacle as before. Furthermore, the exoskeleton is a piece of technology that is designed to align with the human posture; it is made to get in the way as little as possible. As a force multiplier, the exoskeleton can have potential dangers as well when the soldier underestimates the multiplication of the power it generates. The user has to be aware of this force multiplication, for his safety and those around him. The interesting part is that the exoskeleton is a technology that both the military and the civilian world develop. Sometimes for similar tasks, but in the military, mostly for specific soldier related tasks. Therefore, the exoskeleton is a multistable technology in both contexts.

The second example is a human enhancement of a different nature, namely genetic enhancement. First of all, it is an active biotechnical enhancement, which changes the users' DNA, in order to enhance certain aspects of the human body, or cognition. It is the most

disputed human enhancement technology and at the core of the stalemate between the bioconservatives and the transhumanists. The biggest practical concern of this form of human enhancement is that there are many unanswered questions concerning genetic enhancement. One of these questions is the concern about the irrefutability of genetic enhancements and the unwanted side effects, like destroying or damaging other parts that should have been unenhanced. The two variants, somatic and germ-line genetic enhancement, do give a bit of nuance to this concern. In the case of somatic enhancement, just one person is enhanced, and if something goes wrong, the problems stay with this one person, which would make somatic enhancement a safer technology to test. In the case of germ-line genetic enhancement, the effects would be passed on to the offspring of the person on which it was tested. Thus, the possibility of spreading an unwanted side effect is more significant than with somatic genetic enhancement.

Genetic enhancements do have the ability to change the users' microperception, as the users' sensory input can be changed, which also changes the users' macroperception in ways that remain unknown until it happens. One of the problems with genetic enhancements is that the certainty of the enhancement doing what it is designed to do is still unknown. This problem includes even more unknown multistability of genetic enhancements, as a specific genetic enhancement might get used in different ways than intended, as it could be that the enhancement enhances, or damages other aspects than initially intended. Thus, for developing the genetic enhancements, one might want it to only enhance one specific feature, without any side effects.

Another issue with genetic enhancements is that it is taken home with the soldier, which is not the case with the exoskeleton. There is also no way of shutting down any genetic effects done by the genetic enhancement, as well as that the effects are permanent.

To conclude, this subsection has given the insight in how postphenomenology can take the human enhancement debate forward, leaving behind the metaphysical mistakes, assuming a status quo for the human being and a dichotomy between the human and technology, made by the bioconservatives and the transhumanists.

Section 6: Conclusion

In this thesis, the soldier, the human enhancement debate, and postphenomenology stood central in the question concerning human enhancement. On this subject, the main question was: How can postphenomenology, in a military context, provide a way forward in the human enhancement debate? In order to support this question, Section 2.1 went into the current human enhancement technologies, the reasons for the military interest in human enhancement, and the section went into the effects of the enhancements on the soldier. The two main parties in the human enhancement debate, the bioconservatives, and the transhumanists, were introduced, their point of view explained, and why these two parties are in a stalemate. This stalemate is based mostly on the metaphysical matter of what defines the human being, and whether the human being, after applying human enhancements remains a human being.

Furthermore, Section 5 explained postphenomenology, as well as giving the reasons why it provides a way forward in the discussion. Postphenomenology answers the main research question by stating that it dissolves the metaphysical debate surrounding human enhancement, as the human being can already be considered a cyborg. Therefore, there is no transition from being a regular human to becoming something different after the use of human enhancement. The military context and the soldier ensure a more explicit and more convincing argument of seeing the human being as a cyborg. Dissolving the metaphysical debate opens up the way to focus solely on the practical issues that accompany human enhancement technologies.

The first starting point for this thesis is the military human enhancement technology. From the research done on the relation between the military and technology came forward that the military is developing the newest technologies to give their soldiers the upper hand in combat. This investment in technology becomes apparent when studying military history, and therefore, it is not strange to say that technology will remain a part of the military in the future (Black, 2013). Many military development agencies, like DARPA, are continually working on making sure that they have the newest and best technologies available for their soldiers, which makes the military an exciting subject for the human enhancement debate, as the military is not afraid to push the boundaries in human enhancement even before the debate started. The premise of the human as a cyborg becomes more evident when looking at the military context. Therefore, it is an exciting place to inquire (possible) effects of human enhancement

technologies, as well as applying postphenomenological thinking in order to analyze human enhancements.

The biotechnical enhancements discussed were divided into the two categories as provided by Wilson (2004): external (bio)technical enhancements and internal biotechnical enhancements. The internal biotechnical enhancements divide again into passive and active enhancements. The technologies discussed in Section 2.1, are what military is currently working on, and in some cases already using. What the discussed enhancements show is that there is a close relationship between technology and the soldier. The haptic suit for pilots mentioned by Singer (2010) and Clark (2013) is an excellent example of a close human-technology relation. While investigating the cognitive enhancer, it came to light that cognitive enhancers were not only prescribed by the military but also self-prescribed by soldiers (Kamieński, 2017). Thus, the military is not the only one that is out to improve the soldier's capabilities; the soldier himself is also trying to improve his capabilities.

The military enhances its soldiers for a couple of reasons. First of all, it is to give their soldiers an advantage over their enemy. However, there is more to it; the increased number of technologies used by the soldier makes the soldier less of a priority for the military. The soldier's flesh is no match against machine guns and large artillery pieces, which became extremely obvious during the twentieth century. This development is a result of the industrialization of warfare during this period. Therefore, the soldier needs new technologies that protect him against those technologies, which is an ongoing process. Furthermore, through the development of new technologies, the soldier is coming in places where he would not come without these technologies. Technological artifacts like the flight suit, night vision goggles, and scuba gear, as well as the technologies that allow soldiers to perform better for a more extended period of time, like Modafinil enhance the performance and the capabilities of the soldier (Singer, 2010; Blackmore, 2011; Black, 2013; Kamieński, 2017).

It seems that the effect that the enhancements have on the soldier is that the soldier is put more and more into a position where he is becoming an operator of technology. There are fewer soldiers needed to do the same job (Blackmore, 2011).

Another issue is that it is less necessary to go to war, which changes the view of the general public towards soldiers. The warrior trade is seen as something to be less proud of than it was many years ago (Coker, 2007). By making the soldier more an operator of technology, it changes the warrior into a cyborg, which is one of the starting points of this thesis. Because of this, the soldier becomes a perfect example of the human being as cyborg premise.

The definitions of technology and the cyborg are the two starting points of this thesis, with which it is possible to enter the debate on human enhancement. The debate is consisting of two major parties, the bioconservatives, and the transhumanists. Additionally, this thesis proposes a third way of looking at human enhancements by adopting postphenomenology. Where both bioconservatives and transhumanists utilize a status quo to state what the human is, Aydin (forthcoming) states that the human being is something that is continuously redefining itself, which means that there is no status quo, to begin with. Furthermore, postphenomenology proposes that there is no boundary between human and technology. It is even the case that human and technology co-constitute each other.

From the analyses done in Sections 3.2, 4.2, and 5.2, the results, as shown in table 1, can be extracted. This table gives a short schematic overview on which particular categories of enhancement the three different parties agree with, and those which they do not agree with.

	Bioconservatism	Transhumanism	Postphenomenology
External (bio)technical enhancements	Agree	Agree	Agree
Passive biotechnical enhancements	Not agree	Agree	Conditionally agree
Active biotechnical enhancements	Not Agree	Agree	Conditionally agree

Table 1: Table of agreement on human enhancement

From this table, it becomes clear that the three parties do not object against the category of external biotechnical enhancements, which is mostly because the technology is something the user wears. Thus, there is a clear separation between the user and the technological artifact. The externality and internality of the different human enhancements are what makes the difference in whether the three points of views agree with it or not.

What does not become clear from Table 1 is how postphenomenology can pose a middle ground between the two extremes, since at first glance, postphenomenology seems to agree with the transhumanists' position. On the other hand, bioconservatism is against human enhancement. They subscribe to the idea that enhancing oneself would undermine human dignity (Fukuyama, 2002), which could lead to hyper-agency (Sandel, 2007) and other issues that threaten the status quo of being human.

The transhumanists agree with the bioconservatives considering the human status quo, but instead, they want to improve the human being by "thoughtfully, carefully, and yet boldly applying technology" until the human can no longer accurately be described as human (More & Vita-More, 2013, p. 4). It is this dualism that is the problem in the human enhancement debate. According to postphenomenology, technology and the human affect each other more than the bioconservatists and transhumanists are willing to realize. By removing the dualism, it becomes apparent that there is no such thing as the posthuman and that the human does not become less, nor more than human by enhancing itself. The human is already in a constant state of becoming.

The argument of the status quo is something that comes forward in both bioconservative and transhumanist literature. Fukuyama (2002) states that what is included in human dignity has expanded throughout history; he mentions that a hundred years ago, women and black people were not part of human dignity at first, but now they are. Thus, why would an enhanced human being, a hundred years from now not be considered a part of human dignity? This reasoning is one of the places where bioconservatives make a mistake in their argument that there is something intrinsically human that needs preservation as both the human essence and human dignity are terms that redefine themselves continuously.

The bioconservatives make it seem like they do not have a logical standpoint, as they pose different objections to human enhancement. They are making it difficult to get to any conclusions, while their main idea is to forbid any form of human enhancement legally. However, human enhancements would be allowed if a person has less than the standard, average, human being, or if they role the person plays a vital role in society, like in the surgeon example mentioned in Section 3.2.2.2 (Kass, 2003). This way it is permissible for some bioconservatives to enhance the soldier if it would improve an already learned skill, or if like in the category of the external biotechnical enhancements the user and the technological artifact are separable.

Transhumanists, on the other hand, are open to almost any enhancement as long as the enhancement is safe, and does not jeopardize the human's health, and even if it does, their technological positivism will state that there will be a fix for that issue afterward. Transhumanists see a bright future ahead for the human being if he or she would accept technological enhancements. This positivism is shortsighted as any possible new issue might not be that easy to solve, let alone solved quickly. A milder transhumanist like Buchanan (2011), states that the enhancement of the human being would be a gradual process, and when the human being enhances itself over time, they would still be considered humans. This gradual

process implies that the boundaries of the human being are already something that continuously changes, with this in mind, the step to stating that there are no boundaries at all is not that big.

Nevertheless, transhumanists make the same assumption as the bioconservatives that there is a status quo of the human being from which the human will transcend from in order to become posthuman. The second mistake the transhumanists make is that they see the transcendence of the human being as something valuable in itself. However, this value of the transcendence is misplaced since there is no status quo to transcend from.

By solving the metaphysical debate, postphenomenology makes room to look at the issues of human enhancement technologies more practically. For this, postphenomenology provides a set of tools that allow for a new way of analyzing emerging technologies. It can be used to analyze the emerging technologies that are pushed farther in the military context in order to decide to what extent these emerging human enhancement technologies should be considered for civilian use.

On a more pragmatic note, postphenomenology approaches things differently and proposes to move on to a new way of looking at the human and doing ethics (Verbeek, 2011). Instead of seeing ethics as the border security between subject and object, ethicists should work with those who develop the human enhancements technologies. Also, it would be odd to state that ethics is border security when postphenomenology claims that there is no boundary between subject and object.

Therefore, postphenomenology proposes that the all the involved parties, the military, soldiers, engineers, and ethicists work together in the development of new human enhancement technologies in order to cover all possible aspects, effects, and other uncertainties of those new technologies, which means that the development of new technologies can take longer, but the long-term effects of new technologies might be less controversial and have fewer unknown factors when the technology is brought on the market for the consumer to buy. As a branch that is often at the forefront of new technological developments, the military, with its dedicated people, makes a great place to do these kinds of analyzes on human enhancements. The military knows how to get the results they need and how to gain state-of-the-art technologies in order to gain the advantage. Achieving these results sometimes goes against the will of the soldier himself, and although this might be understandable from a military point of view, from the soldier's point of view, this is not the case (Taraska, 2017).

Nevertheless, the military is the ideal place to develop human enhancement technologies, as it often has a large budget, or at least in the U.S., to spend on the development of new technologies. Therefore, the military is an interesting place to get insight into the matter

of human enhancement. It also poses a compelling outline for the discussion on human enhancements, to define the effects of such technologies on the soldiers and to take these into account when discussing human enhancements in the civilian context. The gained information can be utilized in the discussion on whether (in what way) the human being should enhance themselves or not. However, the soldier is the perfect example of the idea that the human being is already a cyborg. As stated in Section 2, the soldier is continuously enhanced in numerous ways by the military. Also, the metaphysical question on humanity is less of a concern in the military than it is in the civilian context. It is here that the turn to postphenomenology can leave its mark, focusing on the pragmatic questions of human enhancement in a military context and bringing the answers to those questions into the civilian context.

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