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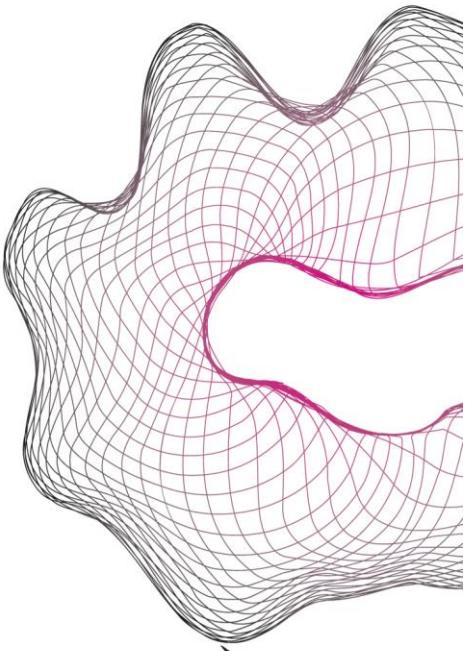

SOCIAL SUBJECTIVITY IN MEDIATED POSTHUMANISM

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Introduction

This thesis is concerned with the recent development of new emerging biotechnologies and the current philosophical investigation in the relation between technology in general and these new emerging biotechnologies in specific and the human existence. It will focus on the subjectivity of the human individual in regard of new technologies and the role and importance of supportive social systems for the technologically mediated individual.

To approach the human individual both in regard of the development of new emerging (bio-) technologies and the constitutive role of the social environment it is suited in, this thesis shall be based on mediated posthumanism originating in philosophy of technology and resilience studies originating in psychology. In mediated posthumanism, the argumentation is based on the conceptualization of the human individual in a co-constitutive relation with technological artefacts. In fact, based on this conceptualization of 'originary prostheticity' and the succeeding approach of 'technological mediation', the human individual is effectively disposed of its status of an autonomous, free-willed human being but is instead reconsidered to be ontologically intertwined with its technological artefacts.

For mediated posthumanism, this loss of autonomy is not the end of the story. In the realization of the originary prostheticity aspect of technological artefacts and the mutual constitution of humans and technology is no determinism but simply a realization of a complex systemic intertwined-ness. The individual is still entitled to liberty of action *within* these relations and ontological dependencies. In Foucault's account of 'subjectivation' and with his conceptualization of 'freedom', the technologically mediated human individual regains a re-invented ability to account for its own actions. In *consciously* 'subjectivating' to the power-relations that constitute the subject, the individual is able to define its own constituting influences and thus transform itself in respect to these influencing, determining power-relations. In this reinvention of a human subjectivity in regard of technological mediation and with concepts of 'originary prostheticity' and 'subjectivation', a simply but very important aspect is missing: the social and societal embeddedness of the human individual.

This thesis shall explore this conceptual gap in mediated posthumanism and argue for the integration of methods for investigating in the dependencies of the human individual in its constitutive influences in the social and cultural-societal area. In order to achieve this goal, in this thesis, an approach to the human subjectivity shall be introduced that originates in psychological research: resilience studies. This unconventional step shall help to introduce a concept to mediated posthumanism that is conceptually not that differently arranged. Although philosophy of technology and psychology are differentiating disciplines they focus on similar issues in human subjectivity.

In introducing these two approaches: mediated posthumanism and resilience studies, to each other it is not intended to merge two disciplines but to exchange concepts and methodologies to the respectively other discipline. Based on the acknowledgement of a resemblance in conceptual aims and comparable approaches, each approach can benefit of the point of view of the other discipline to sharpen the own approach.

In fact, in the case of mediated posthumanism this thesis will show that acknowledging the social constitutiveness of the human individual is indeed necessary to meet the own requisition of a thorough understanding of the constitution of the human individual in regard of new emerging biotechnologies.

Following this, the central question of the thesis is:

How could resilience studies add to the concept of a technologically mediated human subjectivity in mediated posthumanism?

The concept of mediated posthumanism, thus the concept of a human individual constituted through technological mediation and examined in regard of the influence of new emerging technologies based on its subjectivity, shall be approached on the basis of Tamar Sharon's PhD thesis of 2014. Herein, the section on postphenomenology based on Don Ihde and Peter-Paul Verbeek shall be deepened, to introduce the core-concept of both mediated posthumanism and postphenomenology: technical mediation. This concept has evolved around the issue of human subjectivity in regard of new emerging biotechnologies and the implications for human existence. The account of subjectivity, thus taking the persons subjective relation to technological devices at the center of the framework proved to be the most interesting account in this regard.

Sharon's account on subjectivity is focusing on the role of the subject that is constituted not only by human but also by non-human actants. This latourian understanding of agency in relation to each other is reflected upon and enriched by the idea of technical mediation. The resulting concept argues for new investigation in the role of the subject, the subjectivity of human individuals. Sharon argues, that although both methodological and radical posthumanist investigate in this regard, they do not give enough attention to subjectivity and a new conceptual framework is needed that puts this subjectivity approach central: mediated posthumanism. In Sharon's genealogy of posthumanist reasoning the above mentioned story of technological influence on the human individual becomes visible. Humanistic approaches to human-technology relations are based on a conceptual differentiation between a human sphere and a technological sphere. In this conceptual framework technological influence on the individual and its constitution cannot be grasped fully. Only in non-humanistic approaches the full role of technologies became apparent. Here, the human being is pictured as determined by external influences and changed through interacting with them. Only in perceiving these external influences as a part of the human ontology enabled the full picture of human constitution. In this perception of human ontology, a loss of autonomy, freedom and self-determination is embedded, though. It seems that not only the individual but all his technologies and the environment determine how the individual acts. The affiliation of responsibility seems lost.

Only in mediated posthumanism, this self-determination and more importantly the account of responsibility for the individuals own actions seems reestablished: through Foucault's approach to 'subjectivation'. In this approach, self-transformation, discipline and exercise lead to an ethically accountable and responsible, 'free' life. The individual is only able to be 'free' when it acts according to the external power-relations it is subjected to and consciously subjectivates itself to these powers. The acknowledgement of the constituting aspect of external powers ought to be used in an informed

and directed way to transform the own self to a self-responsible being. In the tradition of philosophy of technology, this approach has been pursued in regard of technology and technological artefacts. The human constitution is not only influenced by technological artefacts, though!

Through the investigation in resilience studies, outlining its methodology and core-concepts, it can be seen, that human subjectivity is not only constituted by non-human, thus technological influences. In questioning whether the approach of mediated posthumanism offers enough insight in the relation between the technologically mediated human individual and the social group, the family, friends and general, greater social context, I took interest in an approach that, although originating in another discipline, was investigating in exactly that: the account of subjectivity towards the social constitution of the human individual. To further investigate in this matter this thesis shall investigate in this approach originating in the discipline of psychology which could help to fill a missing gap between the subjectivity of the technologically mediated human individual and the subjectivity of the individual as constituted by its social environment.

'Resilience studies' are originating in research on the resilience of human individuals, mostly children who showed the ability to recover or adjust to adverse situations and pursue a healthy developmental pathway. Through outlining the approach of resilience studies a general framework will appear that speaks for the embeddedness of the human individual in the realm of social interactions, societal and cultural norms and values. It shall become clear that the human subject appears not only as influenced but constituted by the stability and functionality of these external systems of interactions, norms and values to which the individual is subjected to. This acknowledgment shall lead to the construction of a concept of the 'subjectivity of the socially mediated human individual'.

In this thesis it shall be shown that between this concept of a socially constituted individual and the concept of a technologically mediated human individual are conceptual resemblance. Both conceptual approaches to subjectivity of the human being, the technological subjectivity and the social subjectivity, exhibit parallels allowing to translate findings, insights and concepts from one approach to the other.

This thesis is thus build to present an account of 'social subjectivity' that is understated in the current approach of mediated posthumanism. It becomes clear that the human individual is at least as constituted by a concept of 'human adaptation systems' as it is by the concept of 'technical mediation' focusing on technological devices. The approach presented in mediated posthumanism to consciously subjectivate the human individual to the relations of power introduced by technological devices is indeed dependent on the stability and functionality of human adaptation systems. The understanding of human existence as *subjectivity*, as being always in co-constitution with the phenomena where the intention is focusing on, as being mediated through the ubiquitous presence of technological artefacts, cannot be understood without acknowledging the embeddedness of the human individual in a realm of social factors and acknowledging the importance of human adaptation systems in the constitution of human subjectivity.

Drawing on Lucie Dalibert's (2014) PhD thesis, the fourth chapter shall outline the implications of somatechnologies. Here, a similar critique of mediated posthumanism can be found. Dalibert showed that through the case of somatechnologies, technologies that directly interact with the body or are incorporated in the body such as prostheses or internal devices, need a specialized account in the more abstract approach of mediated posthumanism. The intimacy of somatechnologies and the ramifications of the concept of anthropotechnologies shall outline the immediacy of a need for an account for the social embeddedness of the human individual. Mediated posthumanism is the most actual and precise approach to new emerging biotechnologies and is suited to overcome humanistic flaws and futile perspectives. Nevertheless are aspects of human existence and constitution missing: such as the account of the body or as this thesis shall show: social embeddedness.

Chapter 1 – Mediated posthumanism

Investigations in the subjectivity of human individuals in regard of technology and the influence of technology on the human existence and constitution have been undertaken by various authors in the past century. Tamar Sharon (2014) has comprised some of these works, which are especially interested in the influence of new emerging (bio)-technologies on the human constitution under the term 'posthumanism'. Additionally insightful and more general approaches to technological influence on human existence can be found in the postphenomenological approach by Peter-Paul Verbeek and in Steven Dorrestijn's account for Foucault's subjectivation theory. Both, the approach of postphenomenology as well as the concept of mediated posthumanism, offer intriguing ideas to the role of technology in human subjectivity. Based on the principle of technical mediation, both approaches conceptualize the human individual as co-constituted by technological artefacts. They concur in showing that human existence is not understandable without including technologies, especially technological artefacts as constitutive aspects of human experiencing and existence.

As stated above, *mediated* posthumanism represents the final approach resulting of a lineage of philosophical investigation in human-technology relations with a special focus on the impact of new emerging biotechnologies. It hereby reestablishes self-determination in a framework that appeared to have outlined the determinated condition of human existence. As this chapter will reveal are humans and technological artefacts ontologically intertwined in the acknowledgment of the mediating effect of technological artefacts. Based in Stiegler's (1998) 'originary prostheticity', mediation theory outlines the human being as constituted in regard of technological intentionality and agency. This thought threatens the autonomy of human individuals as self-determined individuals with a free-will because of the apparent partly loss of autonomy and self-determination to the mediating power of technological devices.

In mediated posthumanism, this inter-dependency and mutual constitution is not feared to alienate humans from humanity. Instead, the framework of mediated posthumanism offers Foucault's subjectivation theory as a way to regain self-determination that can be achieved without losing the acknowledgment of technological mediation. Especially this acknowledgement of the human's constitutional exteriority and the influence of external entities such as technological artefacts is the key information in this chapter. To be able to understand why humanistic accounts of posthumanism do not offer enough depth to approach the human existence in regard of new emerging technologies, it is necessary to outline them here in a brief summary. Later in the thesis, in chapter 3 and in the discussion, it will become apparent that the multi-faceted understanding of human constitution is the aspect that has both been revealed by mediated posthumanism and not been pursued fully enough. Only in acknowledging the social realm, the precondition of human subjectivity, other aspects may be understood fully.

In this chapter the origin of this narration and outline where mediation theory is based on shall be introduced. It shall depict how the approach of mediated posthumanism has been built up in this context of investigations in human-technology relations. In drawing the context of mediated

posthumanism and its conceptual origins, this chapter is designed to outline the strength but also the gaps in mediated posthumanist theory.

In the following section Tamar Sharon's overview of posthumanist approaches such as liberal, dystopic, radical, and methodological posthumanism shall be introduced and succeeding, the approaches by Verbeek and Dorrestijn shall be introduced as they represent the basis for mediated posthumanism, which is Sharon's conclusion of the posthumanist development. In this mediated posthumanism approach, Sharon argues that methodological and radical posthumanists lack the acknowledgment of a deeper account of 'subjectivity' as can be found in a re-interpretation of Foucault. In chapter 2 take this line of thought shall be picked up and the approach of 'subjectivation' that can be found in Foucault in regard of technology as outlined by Steven Dorrestijn (2012c) shall be outlined.

Chapter 1.1 – Posthumanism, the origin and the differences

The term 'posthumanism' in the way it is used here, has been formed by Tamar Sharon (2014) as an umbrella term describing authors and debates which are concerned with the composition of the ontology of the human being in regard of recent (bio)technological development. Posthumanism comprises hereby two terminological meanings which represent at the same time how Sharon distinguishes between the four groups of posthumanism: liberal and dystopic posthumanism grouped as humanistic, and radical and methodological posthumanism grouped as non-humanistic approaches.

In this overview of the history of posthumanism and the succeeding conclusion to Sharon's mediated posthumanism each approach shall be introduced briefly. Especially the later, non-humanistic approaches of radical and methodological posthumanism are important to recognize for understanding the approach of mediated posthumanism, but humanistic approaches, such as liberal and dystopic posthumanism are interesting for the thesis, as well. In these two approaches, many intriguing ideas can be found which shall be introduced here in this section.

Humanistic posthumanism

In the media most dominantly represented is the reading post*human*-ism. This refers to the *humanistic* understanding of a human-technology schism and comprises both positive (liberal) and negative (dystopic) groups of posthumanist authors that argue on behalf of a dualist conception of a human sphere and a technological sphere and the relations in between. Well-known authors of liberal posthumanism are Nick Bostrom, John Savulescu and Natasha Vita-More[1]. As representatives of bioconservatism Michael Sandel (2004), Leon Kass (2003) and Francis Fukuyama (2002) may be named. In these two groups the term refers to the 'posthuman', a conception of an entity exceeding the natural human state of being in every way.

For liberal posthumanists, this state of post*human*-ism is a positive, beneficiary state of exceeding human capacities to an extent that renders these new entities un-human. The theorized intermediary

[1] In regard of the topic of Transhumanism, these authors can be found in 'The Transhumanist Reader' published by Blackwell and edited by Max More and Natasha Vita-More in 2013.

steps to the post-human are called the trans-human and are name-giving to the movement of 'Transhumanists'. For dystopic posthumanists, this post*human*-ism represents a state of humanism where technology has alienated the human existence from its human nature. 'Human nature' is conceptualized here as a beneficiary state almost such as the platonian 'form' from which alienation means decay and the loss of humanity.

Each of these accounts of *posthuman*-ism is according to Tamar Sharon based on a human-technology dualism that reduces technological artefacts to instrumentalist means to ends and the human counterpart as a humanist conception of the subject as a free-standing, autonomous being. 'Human nature' is perceived 'as something fixed and given that can be unequivocally distinguished from the realm of the artificial and manufactured, augmented by the normative claim that human nature should be distinguished (and so protected) from the realm of the artificial because it is intrinsically valuable.' (Sharon, 2014, p. 69) Apparent here are the essentialist notions on the human existence and technology. Each notion, human and technology, are comprised to a unified understanding, disregarding differences and nuances of each. Such essentialist approaches can on the one hand be technophobic and bound to nostalgic concepts of a 'pure nature' or a 'human nature' deserving protection from the negative influence of technology. On the other hand, this essentialism can lead to the concept of technophile liquidation of the boundaries between 'human nature' and 'technology' to new forms of hybridization[2].

It is this essentialist, dualist, human centric approach of human individuals that is attacked by non-humanist approaches. In the later part of the chapter this aspect of human subjectivity as a free, autonomous and independent human existence shall be opposed. But beforehand, the major dispute between liberal and dystopic posthumanists shall be outlined briefly as it is a vastly debated stance of philosophy of technology.

The dispute between liberal and dystopic posthumanists is publicly revolving around a certain kind of technology that contains the ability to, or is especially produced to enable 'human enhancement'. Especially in discussions concerned with new emerging technologies in fields like Nano-, Biomedical-, Information technologies, and cognitive sciences (NBIC). 'Enhancement' is hereby an ambiguous term in recent literature on Human Enhancement and Technology. The ambiguity is based in a commingling of both descriptive aspects and anthropological aspects of human enhancement issues within the term 'enhancement'. Anthropological issues like the composition of a 'human nature' or boundaries between humans and technology often blur with the definition of which intervention in the human body and mind counts as enhancement. This leads to extended communicative difficulties in regard of what exactly one is talking about when it comes to issues of human enhancement. In Sharon's terminology, critics of the usage of enhancement technologies are to be equaled with dystopic and proponents of enhancement technologies to be equaled with liberal posthumanists. Some liberal posthumanists gather themselves under the label 'Transhumanists' (Transhumanist Declaration,

[2] In this regard the term 'hybrid' refers to the combination of two separate entities, two separate 'spheres' that become hybridized. Later in the thesis I shall present another concept of 'hybridization'.

2012). Transhumanists coined the term for dystopic posthumanism as 'bioconservative' (see Bostrom, 2005b).

The debate between transhumanists and bioconservatists is a well-discussed and broadly known dispute. Although the approach of humanistic posthumanists is disregarded in mediated posthumanism it shall be discussed at this point briefly. As I shall argue in later in the thesis, even though both liberal and dystopic posthumanism are based on obsolete preconceptions, they still have much to offer in thinking about the influence of new emerging biotechnologies.

'Liberal' posthumanists, such as Nick Bostrom (2005a,b,c, 2008), Julian Savulescu (2009) and others are using the concept of human nature as a dynamic, changing entity which is as always influenced by technology (Bostrom, 2005c). As outlined briefly above is the conception of 'enhancement' in this context fluidly interwoven with this concept of human nature. 'Enhancing' one's traits is thus embedded in the human nature and closely linked to technology. In liberal posthumanist argumentation, enhancive procedures that aim at enhancing human traits on the basis of genetic alteration, drug use or other principles are techniques succeeding technologies based on other means which enable the human being to excel their abilities (Bostrom, 2005c). This means that building a forklift to lift weights that a human cannot lift or build a plane to fly is equaled to giving humans wings and massively augmented strength. Using technological devices or enhancing the human body with technological intervention is equaled in this way of thinking. Transhumanists argue that enhancing humans is part of human nature and that we have the responsibility to wipe humanity of disease and agony (Bostrom, 2005c, p. 2). With this conceptualization they come quite close to technical mediation theories. Although liberal posthumanist arguments have many similarities to technical mediation theories, they differ in an important point. Technology is used in their conception instrumentally like a tool, a mean to achieve a goal (Sharon, 2014, p. 83); something that is used to fulfill a purpose and then laid aside. Transhumanist instrumentalist perception of human existence can be seen in this exemplary quote: 'In reality, transhumanism doesn't find the biological human body disgusting or frightening. It does find it to be a marvelous yet flawed piece of engineering.' (More, 2013, p. 15) The human body is here equated with an engineered piece of technology and in line with the above discovered instrumentalism thus equated with something that is prone to design flaws. In here, a depreciation of the human body to an exchangeable, arbitrary piece of biological machinery prone to reconstruction can be seen.

Although liberal posthumanists are flawed in their bluntness towards the complexity of technological influence on human existence, they nevertheless are very eager to investigate in possible technological futures. They offer a pool of possible technological developments and investigate in the merits and possible, avoidable threats in intriguing detail. These insights and possible scenarios may be seated in a flawed framework, but have to offer these detailed ideas *en masse*. An interesting introduction to the most well-known writers in liberal posthumanism can be found in the Wiley-Blackwell reader 'The Transhumanist Reader' (2013).

A common point of view among liberal posthumanists lies in the perception of technology as a mean to serve humanity in overcoming weaknesses, diseases and limitations. 'Transhumanists, seek not

utopia, but perpetual progress – a never-ending movement toward the ever-distant goal of extropia[3]. If the transhumanist project is successful, we may no longer suffer some of the miseries that have always plagued human existence' (ibid, p. 14). In this core-element of liberal posthumanist work, ways to positively use technological prospects may be extruded. The usage of technologies with enhancive purpose in direct effect on the human body are a bit too sensitive to be used directly, but transhumanist argumentation can offer insights in issues of equality, fair distribution and social justice.[4] Here, transhumanist thought has spun wide networks of argumentations based in various ethical frameworks. It would go over the scope of this thesis to outline these arguments more detailed, nevertheless, these and other issues are addressed and could offer interesting insights and factoids to a debate in mediated posthumanism on similar issues.

Dystopic posthumanists on the other hand argue that there is a unique human core, a human nature that is threatened by these various 'enhancive' methods. In their line of argumentation a clear line between 'technologies' as tools and 'enhancive procedures' can be found. Their argumentation rests on various metaphysical stands. Michael Sandel (2004) is worried about the constitution of family structures when parents start to alter the children's genome and appeals to a certain 'given-ness' of the human being. Sandel is also raising the issue of human imperfectness and fear human failure in changing such a complex thing as the human existence. This echoes the concern of Francis Fukuyama, who argues that allowing genetic alteration of the offspring will inevitably lead to the increase of social inequalities, will turn monetary disadvantages into biological ones, and will embrace the consumerist principle on human beings (Fukuyama 2002). Habermas (2003) argues that these inequalities could lead to a disruption of the moral community. This moral community is the location for human nature, as in interpersonal relations, human nature becomes significance through mutual respect between equal individuals.[5][6] Dystopic' posthumanists are opposing thus the conceptualization of enhancement and human nature in relation to technology vividly. In their view, 'new emerging biotechnologies' is something that needs not to be included in 'human nature' and possible enhancive procedures would threaten the integrity and authenticity of their stance of a human nature.

Both liberal and dystopic posthumanists are talking about 'human enhancement' in terms of a disposition on the anthropological notion of 'human nature' and are attacking each other's positions while using the same terminology. Here it becomes visible that the usage of different conceptions of 'human nature' cloaked in the same argumentative structures (based on concepts of enhancement) reveals the problem of an unclear defined realm of what counts as 'Enhancement'. Both are relying on a dualist framework that portrays technology and humans as two spheres which are opposing each other. Liberal posthumanists are arguing for combining the two spheres and dystopic authors are warning of hybridization. Nevertheless, both groups are relying on a dualist humanism that renders technology instrumental and human subjectivity is understood as independent and superior to

[3] A concept to replace the term 'utopia' as utopia is described as a fixed, finished condition whereas 'extropia' is defined as a state of perpetual progress to the ever-distant goal of extropia (More, 2013, p. 14)
[4] For further reading I suggest contemporary essays by authors associated to liberal posthumanism (More 2013)
[5] This sequence of dystopic posthumanist authors was found in Sharon, 2014, p. 68
[6] The importance of the 'moral community' and the feedback of morally equals is reflected in the 'subjectivation' section through Foucault's stance on ethical self-transformation and aesthetic of existence

technological influence. Sharon outlined that this instrumentalist perception of technological devices is suspending both approaches from a feasible approach to assessing new emerging biotechnologies (Sharon, 2014, p. 76).

Although I strongly agree that the humanist framework is not feasible to approach the philosophical matter of human subjectivity in relation to and regard of technological presence and influence, it still is able to outline single factoids and relational issues which are able to inform the succeeding approaches.

A prominent example can be found in one of the core-discussions of humanist posthumanism. Among other disputable issues, the definition of the term 'human enhancement' in the vastest comprehension is debated vividly. The discussion circles around anthropological issues of what counts as 'human nature' and whether this 'human nature' is enabled (liberal posthumanists) or threatened by technological influence (dystopic humanism). In the following case it can be seen that it is important to have a clear, unbiased definition of 'enhancement' in addressing new emerging biotechnologies and issues of posthumanism. In a study initiated by the European Parliament in 2009, Christopher Coenen *et al* has argued for such a clear separation of a definition of 'enhancement' and anthropological notions such as 'human nature':

> 'To sum it up, we can safely say that the use of far-fetched anthropological notions is merely a part of a rethorical [sic] strategy which serves, in certain tactical situations, to distract critics or sceptics from the radical character of some emerging technologies and of many envisioned ones.' (Coenen *et al*, 2009, p. 21)

Coenen argued that the usage of the term 'enhancement' is used in each approach, liberal and dystopic, as an anthropological argument. In the survey an approximate definition of 'enhancement' has been provided in contrast to a definition of 'therapy' to excavate the anthropological aspect of a 'human nature' and have clear, technical terms. In this separation of technical approaches to 'enhancement technologies' and 'therapeutic technologies', issues in medicine can be approached. Namely the conceptual drift in definitions of therapeutic methods.[7]

To avoid this anthropological issue, 'therapy' is strictly defined as 'restitutio ad integrum', the restoring to the 'original state' of abilities and functions that have been lost due to injury or disease (Coenen *et al*, 2009, p. 17). Any other techno-scientific intervention in the human body that exceeds the original abilities of that body is defined as enhancement. Any tool, method or substance that is used for the purpose of enhancive interventions is labeled as human enhancement technologies (ibid, p. 23). This definition knowingly excludes any conceptualization of 'normalcy' or 'health'. Both concepts depend on spatiotemporal differences and can be loaded with values. This basic definition of enhancement includes interventions that modify the human body both in short and in long term. Further are in this definition modifications included that aim at sub-normal or super-species and species-atypical

[7] What counts as therapy is subjected to an ongoing change. What counted as a luxury cosmetic surgery can be accounted for as a necessary therapeutic intervention. See more in Boenink, 2012

alterations relatively to a cultural or physical average. Improving one's abilities to a level that is still excelled by other humans would still count as an enhancement.

Especially this aspect of Coenen's definition is quite intriguing as it offers an individualistic account of what counts as enhancement without the detour to species-wide, essentialist definitions of enhancement in regard of human nature. The subjective relation to the intervention in the individual's corporeal being is implemented in such an individualistic definition of 'enhancement' vs. 'therapy'.

With these limitations and additions to the definition, problematic issues are minimized. The definition of 'enhancement' and the opposing 'therapy' are completed with a realm of intermediate issues. In areas where normal decay of the body and disease/illness overlap the term 'therapeutic enhancement' (ibid, p. 18) is instated. This term describes a form of enhancement that serves as therapeutic means and has medical origins, but effects an enhancive intervention. On the contrary are non-therapeutic enhancements such as face-lifting or similar treatments reduced to pure augmentative alterations of the body.

In regard of the intimacy between technological intervention and the individual's sense-of-self Lucie Dalibert's concept of somatechnologies shall be introduced in chapter 4. In Dalibert's 2014 thesis on the body in recent posthumanist stances, the complexity of the body's relation to technological influence is shown. The term 'enhancement', especially 'human enhancement' however is widely used and the above terminological definition may be of help in approaching the issue of technical and social mediation when it comes to the role of the technological device used. Especially in areas where possibly enhancive technologies appear more frequent, in medical biotechnologies and genetics, this fundamental definition may be of help to categorize the relation the patient has to it and the possible impact on the patients live. Between the notions of 'restoring' and 'enhancing' is a huge difference as they reflect varying ambitions in intervening with the body.

This example of the role of 'therapy' in human enhancement debates among dystopic and liberal posthumanists shows, that there are valuable insights in the stances of liberal and dystopic posthumanism. Later in this chapter, a brief conceptual method to approach these valuable insights shall be given without falling under the paradigm of humanistic posthumanism.

The humanistic, dualist framework with the essentialist perceptions of a human and a technological sphere cannot account for the influence of technological artefact as it shall be shown along the arguments of radical and methodological posthumanists. The above section has showed that a humanist approach to human-technology relations, the human existence and ontology is based upon false presuppositions of a free, autonomous and self-determining human existence. Especially social embeddedness is portrayed in humanistic terms. Dystopic posthumanists rank social implications of new emerging biotechnologies very highly but remain buried in the essentialism of an anthropologically defined 'human nature' intermingled with accounts of technological threats. In the next section of this chapter, it will become clear that a humanistic framework is not suited for understanding the human existence in relation to technological artefacts. It will become apparent that the human being is not only directly influenced by but also constituted by technological artefacts. The

implication for human existence, that our perception of autonomy and free-will needs to be blended with the acknowledgment of technological influence especially outlines the limitations of humanistic posthumanism.

The main concern of dystopic posthumanists that human existence becomes alienated by human nature and social relations are threatened by new emerging biotechnologies may be based on presuppositions that cannot be hold in close assessment, nevertheless is it interesting to question the implications new technologies may have on human sociality. In the next section the agency of technological artefacts will investigated, the social implications are overlooked, though.

In following the line of development in posthumanism, the next chapter shall introduce the concept of human subjectivity in regard of the constitutive influence of technological artefacts and the mutual ontology of human and technological existence. It is important to grasp this part of external entities such as technological artefacts to be able to understand the role of social factors and technological artefacts in one approach.

Chapter 1.2 – Postphenomenology and Technical Mediation

The previous section briefly outlined that humanistic posthumanists are based in an essentialist, anthropocentric conception of ontologically distinguished spheres of human (nature) and technology. In this section non-humanistic posthumanists shall be introduced with the aim to outline human subjectivity detached from the concept of an autonomous human individual but focusing on the role of technology in human existence. It will become clear that technology plays a constitutive role in human ontology and that humans and technology cannot be perceived as separate entities. Enabled through that intriguing acknowledgment of a mediated subjectivity it will be shown that there are still aspects of human constitution missing in this concept. The huge determining impact of technologies as constitutive aspects of human subjectivity lacks the acknowledgment of the importance of environmental, social and emotional aspects. In this lacking focus on the realm of the importance of social factors, the individual's stability, emotional constitution, and psychological well-being is merely presupposed or rather subliminal assumed or linked to technological mediation and influences. In this section non-humanistic posthumanism shall be pictured more clearly and the dependencies between technological artefacts and human perception and agency are outlined. This section will focus on the 'subjectivity' of the human individual as it is perceived as the subject to mediating influences. In the point of view of posthumanism and especially postphenomenology it is perceived as the subject to mediating effects of technological artefacts, clearly the objective of a philosophy of technology. Throughout the chapter it will be shown that the mediated character of subjectivity is not limited to technological artefacts but at social requirements and systemic conditions as well. Investigating in the influence and impact of technological artefacts, especially those who are not introduced yet, these understated acknowledged social factors need to be embraced.

Non-humanistic posthumanism

Next to the above described *humanist* conceptualization of posthumanism, Sharon defines two groups which do not follow the humanist preconception of a human-world schism. Here posthumanism is read as post*humanism* and is understood as succeeding humanism in the human-centered dualism between humans and the external world. Humanism describes lines of argumentation that are focused on the central role of human perception and pictures a 'foundational ontological divide between humans and the rest of the world' (Sharon, 2012). These non-*humanist* groups are not bound to this dualist preconception of a human and technological sphere. Sharon differentiates in this group between radical posthumanists and methodological posthumanists. Radical posthumanists describe the technological development as a heavy disruption of human societies which at best, leads to a change of the actual paradigm and thus overcomes societal conformities which are portrayed obsolete such as the concepts of gender, family and human. The technological influence is understood as disruptive force that is attacking these societal conformities and social structures. Methodological posthumanism on the other hand is focusing on understanding the processes that are in place. This group is not per se valuing the increasing presence of technological artifacts in western societies but rather analyzing what led to this development and where it is going. This is a more systemic approach to technological development and the effect on the human being.

For the most part, this section shall focus on methodological posthumanism, especially on postphenomenology (Ihde, Verbeek) as this approach serves as the fundamental construct for mediated posthumanism. Radical posthumanism, on the other hand, approach technological influence on the human being with a political and social reformist perspective. In their view, technological development is putting human individuals but mainly societies and social norms under high pressure. The origin herein may be found in Donna Haraway's 'Cyborg Manifesto' (1991) where Haraway attacked feminist concepts which argued about the role of women in general. In this essentialist approach to women, she argued, which is as wrong as general gender issues, the structural problem of essentialism can be seen. Using the cyborg example as a red line, Haraway showed that there are no essential categories such as woman or man but rather individual subjects in a more generalized context. In her argumentation is technological development, especially, the development of new emerging biotechnologies able to help to deconstruct the preconceived categories that instate determined concepts of human body, gender, and sexual categories. In the acknowledgement of the co-constitution of technology and human individuals, the allegory of the cyborg as undefinable hybrid of human and non-human aspects forces us to reconsider categorical, chauvinistic, gendered, and conformist patterns of thinking and smoothes the way for new concepts and categories. With the image of the cyborg, an image of the human being in a constitutive technological world reveals the arbitrariness of essentialist conceptions of socially predetermined roles such as gender or technology as means. The narrative differentiation of organic nature and an uncontaminated nature are seen as detrimental and untenable illusions (Sharon, 2014, p.88). For radical posthumanists, technologies cannot be conceptualized outside their social context where in return the human relation with the world cannot be understood without the constitutive influence of technology. The change, new emerging biotechnologies most possibly inflict on western societies hence could realize the allegorical

'cyborg' quite explicitly. In radical posthumanism, technological development is thus presenting a possibility to deconstruct old conceptualizations and newly invent structures from the ashes. Radical posthumanism is here investigating in the role of the subject as predetermined by social conformities, cultural context, and technical mediation.

The concept of technology in its disruptive potential as pursued in radical posthumanism shall reoccur later in this thesis in the chapter on resilience studies. As intriguing the idea of 'resetting' categories is, especially chauvinistic and gender categories, this point of view on technology inflicted change may cause trouble and irritation in regard of individual well-being and psychological well-being. In the context of radical posthumanism, this threat to the individual well-being is part of the fruitful deconstructive force as it urges individuals and societies alike to throw over comforting points of views and prejudices. On the other hand is this deconstructive aspect of technological development and the accompanying change a risk factor and negative influence on the individual stability to which the individual need the resilience to cope with.

In addressing the other pole of that subject-object relation that is disclosed here, methodological posthumanists such as Don Ihde, Bruno Latour, and Peter-Paul Verbeek are outlining the role of objects, thus entities to which the subject can subject itself to, in human existence. The concept of technical mediation explores in the role of technical artefacts in our perception of the world. In this context, Peter-Paul Verbeek (2005, p. 99-119) has introduced his idea of postphenomenology in terms of a new hermeneutical stance of philosophy of technology: the role of technological artifacts in the constitution of the subject. In this section the origin of this approach and the role of the subject in relation to technology shall be pictured briefly. In the origins and the development of the theory, the emphases of the concluding theory become intelligible. Hence, it will be discussed how phenomenology arose and why technology and technological artifacts were introduced in the picture.

Phenomenology

Phenomenology, as the origin of postphenomenology, can be found as a concluding theory of the 19th century debate between idealism and realism. Each discipline has been concerned with the relation between the human and the world it is living in (Verbeek, 2005, p. 109f; 2011, p. 7) while granting central focus on human consciousness and the condition of experience. In this debate, defender of idealism vindicated the central role of consciousness: reality appears, and thus only justifiably exists, where it is present to consciousness. Realists on the other hand advocated reality as the prevalent entity and depicted consciousness as human's access to reality. These two different stances on the human connection, the perception of an external world shows an important difference. Whereas realists presume that reality is fixed and it is the human consciousness which is the dynamic aspect that accesses reality in its own way, for idealists reality is a product of the human consciousness implying that were no consciousness focusses on there is no reality. Although each opponent varies in the definition of 'reality' and the understanding of the relation between this 'reality' and the human consciousness, they share a common presumption: that subject (human) and object (world) are

separated entities and that the relation between subject and object persists of influence on each other, except with different accents.

Verbeek described the above dispute as partially concluded in the succeeding phenomenological era. Phenomenology intended to overcome the gap between the subject and the object through outlining that both subject and object are in mutual influence. Husserl, the thought-father of phenomenology was focusing on the relation between the subject and the object instead of focusing on either opponent and its influence on the other. To emphasize that, Husserl proposed the approach of putting things between brackets, a phenomenological reduction he called 'epoché' (p. 109).

Hereby various relations between consciousness and reality can be understood. The term 'phenomenology' is recruited in the principle of 'intentionality' that states that human consciousness only exists in other-directedness, meaning that human consciousness is always consciousness 'of' phenomena on which it focusses its intention on. It follows that consciousness is the place where phenomena appear. The principle of intentionality hereby overcomes the dichotomy between subject and object in the realization that each influences the other as consciousness only exists where phenomena appear and phenomena only appear existent where consciousness is focused on. With this, phenomenology emphasizes that subject and object are interrelated and that human consciousness exists in being consciousness 'of' phenomena. According to Husserlian phenomenology, is the experience of phenomena mediated through concepts, cultural and individual backgrounds, ideas and images (Smith, D. 2013). "Phenomenology studies structures of conscious experience as experienced from the first-person point of view, along with relevant conditions of experience. The central structure of an experience is its intentionality, the way it is directed through its content or meaning toward a certain object in the world" (Smith, D. 2013). In the principle of intentionality, phenomenology highlights the mutual influence of subject (human) and object (world) by acknowledging the way in which individual experience alters the way an object is perceived by a subject and thus both, the object and the subject influence the mutual relation. This insight in subject-relations is further developed by Verbeek who outlines that subject and object are not only influenced but mutually constituted by each other. The subject experiences thus a reality-for-it instead of a reality-in-itself. The world a subject discloses is always experienced in a specific way. The world with which the subject engages a relation always co-determines the way in which the world can be present to the subject. In the moment of experiencing, both subject and world form a hybrid being. The subject in this relation faces a special 'objectivity' of the world and appears in a special 'subjectivity' in opposition to this objectivity of the world.

As mentioned above, in philosophy of technology, these insights and acknowledgments of a mutuality in influence and constitution of individual and surrounding, mediating entities or actants is stripped down to the influence of technology on the human individual. The impact of the acknowledgement of this mutual influence of subjectivity to an external objectivity and the mutual constitutive concept can be transferred to social interactions, societal, and environmental influences as well. The individual is subjected to conformities, interpretations of meanings, cultural dependencies and values, and moderating and mediating factors in the direct environment and its way of perceiving, acting, and

reacting to situations is colored by these influences. The individual cannot be understood without these social constitutive aspects as it cannot be understood without technological influences.

These issues are covered by sociology and social sciences. Nevertheless is there an important acknowledgment in this relation. Philosophy of technology cannot approach these issues without recognizing some of these social relations as well. I argue that individual well-being in regard of the social environment, hence the stability of the individual constituted by its environment is a precondition for the approach which is going to be presented in the next section and next chapter.

Originary prostheticity and technical mediation

Mediated Posthumanism is recruiting its content and concepts largely from radical and methodological posthumanists (Sharon, 2014, p. 136) and draws especially on the concept of technical mediation as preluded above. Radical posthumanism highlights the hybrid character of humans and technological artefacts and the capability of technological development to revolutionize obsolete conceptions and the humanistic dualism and hence asks for a new form of subjectivity and new conceptualizations of human-technology-relations. Although these concepts of radical posthumanism are important for mediated posthumanism and offer intriguing insights, in this section especially the above introduced postphenomenological approach to technologically mediated human subjectivity is highlighted which is located in the group of methodological posthumanism, as it not only offers vast conceptual groundwork such as the concept of technical mediation but also highlights the role of the human individual and the role of single technological artefacts in the constitution of human subjectivity.

Arguing for an originary technicity of the human condition, Bernhard Stiegler (1998) outlined the concept of 'originary prostheticity'. In this concept, the human existence is not ontologically differentiable of technological influence. This concept of originary prostheticity is the basis for the idea of the co-constitution of humans and technology. 'One does not pre-exist nor conditions the other; they co-emerge, coincide and compose with each other' (Dalibert, 2014, p. 132). The concept of originarity is based on André Leroi-Gourhan's (1964) argument that the human's evolving bipedalism was the fundamental evolutionary step that enabled human tool-usage. The freeing of the hands enabled a wider variety of usage ultimately including the usage of tools. The necessity for bipedalism is based in the lack of other evolutionary advantages. Being able to stand on two feet and use a tool proved to be evolutionary beneficiary. In this concept, neither tool nor human bipedalism came first, but human erection to bipedalism and usage of tools co-evolved. Stiegler argued that the usage of tools includes a 'process of exteriorization'. The tool, an extension but yet a part of human ontology, is an external part. 'As a "process of exteriorization," technics is the pursuit of life by means other than life' (Stiegler, 1998, p. 17).

The concept of originary prostheticity is reflected in the concept of technical mediation.

> 'The notion of technological mediation implies that technology is a form of engagement with the world, and that every technological practice, every incorporation of technology into human experience, allows new forms of engagement to take place.

> These may be harmful, but they may also be enriching, and in any case this cannot be determined in advance.' (Sharon, 2014, p.241)

In 'What Things Do' Verbeek has outlined very intelligibly how technological artefacts influence human existence in two ways. 'From a hermeneutical perspective, artifacts mediate human experience by transforming perceptions and interpretive frameworks, helping to shape the way in which human beings encounter reality. […] From an existential perspective, artifacts mediate human existence by giving concrete shape to their behavior and the social context of their existence.' (Verbeek, 2005, p. 195). This twofold concept argues that technologies have constitutive effects on the human existence without queuing in line with classical philosophers of technology how have acknowledged the impact of technology as a whole, in general, on human beings but concluded to the threat that impact poses. Postphenomenological 'technical mediation' allows seeing the influence a technical artifact is able to have on humans and shows that this is not a threat but a constitutive part of the human existence. 'The postphenomenological perspective makes it possible to see how technologies and humans exist together and acquire their characteristics from mutual interdependency. This methodological shift enhances sensibility for effects of technology that add new themes to the known repertoire of existing theories.' (Dorrestijn, 2012, p. 63)

The incorporation of techniques (knowledge of technology usage or certain methods) in the existence of a subject alters the way a subject is present in the world and how the world appears to the subject. Verbeek describes this in two perceptions of mediation: mediation of experience and mediation of praxis (Verbeek 2011, p. 7f). The above mentioned example of technology usage would be expressed in the principle of 'mediation of experience' which include the above described relations (embodiment relation and hermeneutic relations). This principle can also be described as 'technological intentionality': the characteristic of technology to amplify aspects of reality while reducing others. This is highly dependent on the subject as each subject is influenced differently by technological intentionality than others which lead to a multistability of objects. For example, while some use handrails as a subsidiary, others use them as a ramp (skateboarding). Verbeek argues for this point of view in regard of Foucault's analysis of the subject in relation to power. Foucault described the subject not as a free-standing, authentic individual but as mediated by structures of power and mediated by technologies (structures of power that are materially present). In the foucaultian understanding, technologies ought to be understood as standardized structures of action and relations. The structure of a society can be understood as a technology the same way a school is a form of technology. Each figure represents a structure that defines power-relations and exercises a multitude of distinct functions. Within this structure, subjects are subjected to their purpose, the teacher ought to inform, the politician ought to represent and decide. Subjectivity is thus seen as being subjected by something that in return appears as an object to the subject.

The role of technical artefacts in the mediation of our subjectivity can be described in a twofold way. Referring to Don Ihde (1990), Verbeek (2011, p. 8 f.) describes the experience oriented aspect of a technological mediation. Here the hermeneutical question towards the agency of technological artefacts is evaluated in regard of the effect of artefacts on the way humans perceive, experience, and

interpret reality. In 'embodiment relations' the artefact vanishes in the act of experiencing to the background and appear rather as extended bodily parts of the human being. Contact lenses, even more than glasses are not perceived as such but it is perceived *through* them. The mediating aspect of the artefact does not only alter the perceived objectivity but the perceiving individual as well. The way, the individual is subjecting itself to the object in the life-world, is mediated through the technical artefact and is thus subjugated to the intentionality of the technical artefact. This becomes even clearer in the set of 'hermeneutic relations' as briefly described in the next section. Reading time at a clock or reading the thermostat does not alter the perceived time or temperature, it rather provides the reader with an artificial value. The perception is not directly altered this way but it adds a fact to the perceived reality.

Next to the mediation of experience, technological artefacts have mediating effect on praxis. The way, humans are present in the world is mediated by technological artefacts through the way they invite or inhibit to act in a certain way. Traffic lights discipline the behavior of participants of the traffic extremely. At one point they invite to move, at another they prevent moving. Technological artefacts thus transform our action and our presence in the world. The individual is forced to internalize use plans of technological artefacts, align our behavior to them and act differently in situations than it would without that technology.

Postphenomenology

Following this, postphenomenology originates in phenomenology as briefly described above. It distinguishes itself from phenomenology by opposing the dependence of a genuine access to reality as what appears as 'reality' for the subject is constituted by the subject itself in form of a reality for the subject. With this notion, postphenomenology uses the achievement of phenomenology of overcoming the gap between subject and object by acknowledging the intertwinedness and mutual influence on the one hand and adds the claim of the acknowledgment of the co-constitution of subject and object on the other hand.

> 'Human existence does not take place in a vacuum but in a world made of ideas, artifacts, institutions, organizations that all have impacts on human subjectivity. […] Technology can be seen as one of these sources of power that help to shape the subject.' (Verbeek, 2011, p. 68)

Technology usage fosters an alternated reality-for-the-subject as the world appears differently to the user and the user's presence in the world is altered as well (Verbeek, 2011, p. 7). Hereby, Verbeek postulates different engagements with technology a subject can entertain such as background relations where the perception of the technological influence retrieves almost completely. In other relations, the subject is engaged with the world through a technological artefact and the artefact is embodied in the own existence, or up to alterity relations where the subject engages with the artefact itself (Verbeek, 2005, p. 121 ff.).

Verbeek highlights the role of technology by pointing at the mediating role of technology in human life and the in technological artefacts inherent technological intentionality. The mediating effects of technological artefacts are expressed through Don Ihde's human technology relations. Ihde identifies four kinds of relations: embodiment, hermeneutic, alterity, and background relations (Ihde, 1990). 'Intentionality can work *through* technological artefacts, it can be directed *at* artefacts, and it can take place *against the background* of them' (Verbeek, 2011, p. 142, italics in original). Embodiment relations describes the perceiving human individual of a reality-for-it through an embodied artefact. Hermeneutic and alterity relations describe interaction with artefacts themselves. Here the user can get representative information from the artefact (hermeneutic) or is interacting with the device itself (alterity). Background relations describe the presence of technologies fading in the background of human perception.

This postphenomenological concept of human-world relation mediated through technological devices is broadened by Verbeek about two more relations. Based on this interrelated perception of human-technology relations, Verbeek introduced his concept of *cyborg intentionality*. Here, human and technological intentionality are not interrelated but perceived as the intentionality of the cyborg, the human-technology hybrid. Especially in the later section on Dalibert's somatechnologies, this cyborg intentionality will be of interest. Here it is not an abstract construct of interrelated influences and the mediation of technological artefacts merely included in the perceptual relation. In cyborg intentionality, the human and the technological artefact form a conceptual unit with hybrid intentions, *cyborg intentions*. The other relation introduced by Verbeek revolves around the term 'technological intentionality'. Analyzing technological intentionality and its own directedness outlines, that technological artefacts come with their very own intentionality. The use plan an artifact comes with, the aspects of reality it directs focus on and the other aspects it shuts down or pushes in the background are wound up in 'technological intentionality'.

The intentionality of a technological device is highly context dependent and of course dependent on the intention of the user. Verbeek calls the resulting mixture of the individual's intention and the intentionality of the artefact *composite intentionality* which causes a 'composite relation' as an addition to Ihde's four relations (Verbeek, 2011, p. 145 f.) The artifact influences both the subject and the object and thus actively participates in the mutual constitution. The role of technology can be even then present when it is neither there nor used according to a foucaultian understanding as it shall be outlined later in the thesis. The inclusion of the knowledge about the usage of a technology, influences the subject in such a way, that it this technology is part of the existence of the subject. Knowing how to use a heavy object (hammer) to force a small, thin object (nail) in another object of a certain composition enable the subject to apply this knowledge in other situations and other materials for example to use a rock to force a wooden stick in the earth.

Modes of interaction

According to Dorrestijn (2012c) enables Verbeek's concept of the technical mediation approach to reassess historical and contemporary insights in the effects of technologies on humans. Dorrestijn

conceptualizes a repertoire of figures of technical mediation that allows the researcher to use factoids and relational aspects concerning technological influence that have been discussed in other disciplines or frameworks through the lens of technical mediation. Through technical mediation, these observed effects can be treated value free and as an account of possible ways technologies mediate human experience. This way of assessing publications and idea-sets that are external to mediated posthumanism enables the extraction of interesting relational insights from other disciplines. As a part of recent posthumanism argumentation, this method shall be introduced briefly in this chapter and picked up in the following chapter.

Dorrestijn offers a model for assessing the mediating *effect* of a technological artefact. 'If our existence is mediated by technology, then one can ask the question what is the effect, but also: How does the effect reach the human? What is the contact point? Where does the effect affect the humans? […] (This is concluded in) four modes of interaction:

- Above-the-head (abstract): Generalizing claims about technology and humans.
- Before-the-eye: (cognitive): Cues to the mind that can change decision making.
- To-the-hand (physical): Changing gestures through bodily contact.
- Behind-the-back (environment): Influences on humans without direct contact.'
  (Dorrestijn, 2012, p. 64)

Dorrestijn's concept allows re-assessing ideas and insights that have been made by various authors in various disciplines through the lens of technical mediation. The above mentioned groups of *humanist* posthumanists have engaged in vivid arguments and debates over the past decades which employ fruitful ideas on human-technology relations. Although, as argued above, seated in an obsolete dualist preconception, the observations made are nevertheless useful for further investigation human subjectivity.

As briefly introduced above, Michael Sandel (2004), for instance, developed the argument, that genetically modifying children would lead to an altered relation between parents and their offspring. Children as genetically modified 'artefacts' change status from being given to being produced. The parental role of the eternal and unquestioned loving fix-point in a child's life is turned into a role responsible for the genetically make-up of the child and thus indirectly for its abilities and capabilities. With this responsibility comes the possibility to flaw. The child is rendered as a product that can fail and the parents are rendered as the origin of a responsibility that may not be accounted for. Additionally may the 'genetic traits' that get into the focus of attention be granted higher importance as in contrast to a civilization without these abilities. Children without rendered genes may be considered ill-fitted for society and in general could the importance of non-genetic efforts such as self-control, discipline and conscientiousness lose importance.

Only briefly summarized here, these arguments may seem simple but offer interesting remarks on the role of traits. The critique that lies between the lines of Sandel's example, namely that family structures, self-efficacy, and societal balance are threatened, can be broken down to the observations they are based on. In an above-the-head perspective, the technological influence of gen-altering

technologies will have influence on human beings in multiple ways and on various levels. It is affecting the social environment of humans and changes the way self-efficacy is experienced. This leads to the before-the-eye perspective. Relations to capabilities and especially inabilities are changed from 'given' to 'created'.

At another place, this argument is debated much more profound but it serves as an example for the resources that may be approached through Dorrestijn's method. Old arguments, viewed through the lens of technological mediation and a concept of four modes of interaction, can offer insights in the way technologies may interfere with human existence.

Chapter 1.3 – Mediated Posthumanism, a chapter conclusion

Tamar Sharon's mediated posthumanism is recruited of the above presented concepts and suggests, on the basis of the 'subjectivation' approach which is presented in the succeeding section of this thesis, to form 'mediated posthumanism'.

The above mentioned posthumanist stances of radical and methodological posthumanism have succeeded in overcoming the essentialist concepts of the initially described humanistic posthumanists. They have acknowledged and engaged in the constitutive role of technology, outlined the principle of 'originary prostheticity', technical mediation and contributed to the understanding of the mediated human individual and its role and abilities in this hybrid existence. In this acknowledgement of the mediated character of individuals, the originary prostheticity and the co-constitution of individual and technological artefact, a void has been revealed where humanist concepts located individual autonomy, self-determination and free will. This apparent void and lack of autonomy can be suitably closed by the briefly introduced approach of 'subjectivation' that can be extrapolated from Foucault. In the following chapter, Foucault's concept of subjectivation shall be discussed in regard of how it can suit in this postphenomenological approach to human-technology relations, mutual constitutiveness and an originary prostheticity of human existence. What was at stake in the acknowledgment of the technologically mediated human being was the account of subjectivity of the human individual in the realm of non-human actants with agency and intentionality. Foucault's approach to subjectivity, his self-determined concept of conscious *subjectivation*, thus actively subjectivating to existing constitutive power-relations offers an account of *re-inventing* human subjectivity. Subjectivation becomes and active, self-controlled discipline that enables the human individual to attain a *relational* freedom. Freedom as well is understood in foucaultian terms, it is not understood as the absence of boundaries and restraining powers but in the ability to *use* these surrounding, ever present, and indispensable power-relations[8]. The above painted picture of technological influence is drawing the scene in which the foucaultian human individual is seated, but focused on the technological influence.

This exiting acknowledgment of relational interdependencies, power-relations, and the own, individual role in this web of constituting factors is not to be limited to technological influences. Especially when arguing on behalf of a philosophy of technology, in the context of radical posthumanism, arguments

[8] Foucault's concept of ‚freedom' can be found in O'Leary, 2002, p. 108

of deconstructive forces of technology and the originarity of human technicity it is necessary to keep the holism of human existence in mind. The recent development in posthumanist reasoning moves big steps in the right direction and overcomes many obstacles of past paradigms and frameworks, but it is focused too much on technology yet. For now it is important to recognize the importance of the transition that has been performed in posthumanism:

Originating in a humanistic, dualist, and essentialist paradigm, philosophy of technology, concerned with human ontology and the constitution of individual subjectivity, has ended up in an approach that is able to perceive the complexity of multiple actants in the constitution of the subjectivity. For Sharon this acknowledgement goes not far enough, though. The human individual as a subject to the determining power of technology and the status within the social context have been a good start but lack the full understanding of the 'subjectivity' of the human individual.

> 'The discussion on subjectivity in the methodological and radical posthumanist approaches brings to light several significant shortcomings. Methodological posthumanism, after having argued for the agency of technological artifacts, too often fails to carry through the implications this has for human subjects. While radical posthumanism too often concedes to a celebration of hybridity (per se) and the claim that emerging biotechnologies have the potential to bring about a fundamental break with modernity. This critique serves as a platform to introduce the mediated posthumanist approach by reading Foucault's work on subject constitution via the notion of technological mediation and extending his notion of "technologies of the self" to biotechnologies. In this reading, the subject is constituted in specific ways by its technological mediations with the world, but it also develops an active relation to them, so that technologies can be seen as ethical practices that an interconnected, dynamic and molecular subject works with to constitute itself.' (Sharon, 2014, p.135)

As briefly described has Tamar Sharon analyzed a huge variety of authors and concludes the analysis to a comprised form of posthumanism: mediated posthumanism. In this approach, the weak spots of previously described forms of posthumanism ought to be overcome and its fruitful insights shall be molded into the new approach. In this development, the role of the human individual and its relation to the environment it is seated in has been augmented again. Verbeek has investigated in the agency of technical artefacts and outlined its moral weight in the constitution of the human subject. The human individual, as stated above has been embedded in the context again instead of being conceptualized as detached from its environment as in previous approaches. As we recall:

> 'Human existence does not take place in a vacuum but in a world made of ideas, artifacts, institutions, organizations that all have impacts on human subjectivity. […] Technology can be seen as one of these sources of power that help to shape the subject.' (Verbeek, 2011, p. 68)

In the above presented chapter, the role of technologies in a human individual's constitution has been outlined. In the following chapter, the way, the individuals subjectivity is able to deal with this

constitutive grid of external actants is portrayed. But as Verbeek already wrote, human existence takes place in a world full of impacts on the human subjectivity, not only by technological artefacts but by other aspects as well. To be evocative of Leroi-Gourhan's argument on the mutual development of bipedalism and tool usage (due to the freed hands), I want to recall the even older *sociality* of the human species. Even before bipedalism the human species lived in groups, thriving on the mutual help a social group can provide. Sociality is as essential to human existence as it has been argued for human usage of technologies. In the following chapter, the approach to subjectivation as briefly outlined above shall be elaborated further. The individual's ability to exist self-determining in a realm of external constraints has been based on the foucaultian approach of subjectivation, arguing for the individual's ability and responsibility to actively engage in its 'subjectivity'. In the chapter thereafter, an approach originating in psychology shall be presented that offers the ability to introduce the individual's dependency on social aspects as well: the already introduced 'resilience studies' approach. These two chapters perform the main act in this thesis and offer the acknowledgement of human sociality and the therein immanent but yet unrecognized precondition for subjectivation in the approach of mediated posthumanism.

Commemorating technological intentionality and Stiegler's originary prostheticity, the human existence is, as above described not separable by its technological devices used. Human sociality can be described at similar stances. As already mentioned above, this falls under the expertise of sociologists and anthropologists, but as I shall show in chapter 3, human sociality poses an important pillar of human constitution. The human is and has always been a social being and technological intentionality only describes a specialized aspect of human constitution. Without supportive factors, moderating and mediating factors, the human individual is not able to be resilient towards threats that have been announced by radical posthumanists: technological development is a powerful disruptive force that poses a threat to human well-being, the comfort-zone one is in and challenges the stability of one's resilience-mechanisms such as to be found in the third chapter in the concept of 'human adaptation systems'.

In the above chapter, not only the philosophical framework and paradigm can be found, but also the basis for a methodological conclusion of the advocated approach of this thesis. As coined by Sharon, the above described group of authors is called 'methodological posthumanists'. In this chapter, Don Ihde's and Peter-Paul Verbeek's methodological concepts of human technology relations have been briefly illustrated and Dorrestijn's four modes of interactions have been introduced. In the following chapter, 'subjectivation' theory shall be introduced more closely.

Chapter 2 – Subjectivation

In the previous chapter, origin and structure of posthumanist approaches and at last *mediated posthumanism* have been discussed. It became clear that in the acknowledgement of human's originary prostheticity and technological intentionality, the consequential approach of technical mediation threatened the understanding of human intentionality as being colored, if not determined by technological influence. Nevertheless, in addressing human *subjectivity*, thus the view of the human being as the subject in a subject-object relation, mediated posthumanism has found the pivotal point where human self-determination is not ruled out *but asked for*. As outlined above, Foucault's approach to *subjectivation* promises to re-assure self-determination and to regain ethical responsibility, an aspect that is very important in Foucault's approach. In the above described hybridity of human and non-human entities in a composite intentionality (Verbeek, 2011), the account of responsibility got retracted from the human individual and assigned to the hybrid existence, rendering thitherto employed ethical approaches inapt as these are based in the autonomy of the human individual to be able to oblige to ethical approaches. It is not in the scope of this thesis to investigate in realms of ethics of technology; to understand the aim of subjectivation, a fundamental argumentation on behalf of ethical behavior needs to be considered, though. This chapter outlines the origin of Foucault's approach to subjectivation, the two figures of technical mediation and outlines four aspects of subjectivation in order to investigate in the role of subjectivation in mediated posthumanism and to outline the importance of the approach of subjectivation for the overall thesis. This is conducted through outlining the embeddedness of the human individual in the foucaultian approach, investigate in the role of technological devices within the approach in order to align the theme of posthumanism to the approach and finally explores Foucault's concept of subjectivation as a process.

As outlined above argues Sharon's mediated posthumanism approach to broaden the regard of 'subjectivation' in the assessment of the constituting role of technology, to have a closer look at the subjectivity of the individual. The individual's subjectivity is outlined as the last stance of self-determination as through *actively subjectivation* the individual is able to control the external influences that are determining the self. She has argued that a reinterpretation of Foucault's stance on power-relations, self-transformation and aesthetics of existence can be fruitfully included in the posthumanist approach of technical mediation. This chapter draws a more focused picture of this technologically reinterpreted approach to *subjectivation* through the voice of Steven Dorrestijn's doctoral thesis (2012c), Peter-Paul Verbeek's stance on technologically mediated moral subjectivity (2011) and Timothy O'Leary's reading of Foucault (2002).

In this chapter, human subjectivity, ethical responsibility and a methodological approach to the technologically mediated human existence is addressed more closely, intended as a continuation of the previous chapter. Based on Foucault's approach to power-relations, human subjectivity will be addressed in terms of ethical responsibility. It will additionally become clear that Foucault's stance of human subjectivity is broader than the technological aspect that has been pursued in mediated posthumanism. This chapter pictures how Foucault's subjectivation approach is composed and where the approach to originary sociality pursued in this thesis is able to mount. Subjectivation is portrayed

here as the entry point for human self-determination in a framework based on technical mediation built upon a postphenomenological account of human subjectivity. It holds further the connection to resilience studies as outlined in the subsequent chapter.

Environmental embeddedness of the foucaultian subject

The approach to subjectivation, as presented in this chapter, is protruding due to its holism in regard of mutual influences of both individual and environment it is embedded in, paired with a keen focus on the individual's stance. Trying to understand the role of the subjectivation approach in mediated posthumanism is thus dependent on the role of the individual's role in relation to the environment. It is outstanding that in the foucaultian approach of subjectivation, the human individual is not only observed in its relation to other entities but is perceived as part of the network of mutual power relations. Both, context and individual are not perceived without the other and cannot be understood on its own. This reflects in the approach presented in this chapter but also resembles the technological mediation approach as well as in postphenomenology.

In this section, the origin of Foucault's stance on subjectivity is approached. Reminding of the phenomenological approach where the subject-object distinction ought to be overcome, Foucault assessed the subjectivity of the human individual in terms of power-relations instead of experience or perception. In Foucault's approach, the relations between the actants are at the center of the focus and the resulting method aims at a good way to navigate in these relations.

Basically, O'Leary (2002, p. 117 ff.) outlined Foucault's conceptualization of the human subject as a 'form'. His argument states that the 'transcendental subject' that appears in humanism and phenomenology as the origin of the concrete subject, appears for Foucault as a *reflective* image, an after-effect of the creation of the subject. The subject itself is not free, autonomous, and originating in the transcendental subject but it is rather born out of the context. It represents a 'subjectivity' pole in a realm of mutual constituting powers. The *form* that represents the human being is formed by the context it is in. According to O'Leary's notes, 'subjectivity' of the individual is a perpetual condition of human existence: 'There is no such thing as a before the subject, since concretely existing human individuals have 'always-already' been subjects' (O'Leary, 2002, p. 117). In this perpetual condition of being subjected, there is no need and no use to ask for an individual *outside* these relations as there is no instance in which it can be perceived that way. The external environment, the objectivity of powers that subjectivate or 'form' the individual, cannot be removed from the conceptual realm of the human individual.

Perceiving the subject as a 'form' evokes the question for the origin of that form, from what that form is *formed*. For Foucault, the form/subject is formed by brute forces, powers and capacities that *inhere in* the human being which are then 'bent back' unto the subject and thus taming its force. The strategy and the structure that is able to provide this bending back *lies within the relation* to other beings, thus in the social environment. The subject is thus understood as a brute force that is tamed through reflective relations to other individuals or the environment in general. This loop of bending forces from the individual on the individual represents the embeddedness of the individual and simultaneously the

forming process that unfolds the form of the subject. In this picture of forces emitted by the individual that are bend back in relations to other individuals and societal structures such as culture and morality, the approach of technical mediation can be embedded as well. The forces emitted by the individual that are bent back unto the individual in a loop are *bend*, thus *trans*formed and influenced by the bending entities. In this transforming character of the environment, the individual is seated in technical mediation, but importance of spatio-temporal context as well, can be seen. The way it forces are bent is dependent on the context and technologies are a part of that context.

The way in which the individual is subjected to the environmental *objectivity* is flexible, though: 'there is no hint in Foucault that subjectivity itself is discardable – it is merely modifiable' (ibid). In Foucault's approach to subjectivation, this modifiability of the *mode of subjectivity* is the key element of the following section. Additionally to this is the way in which the force of the subject is 'bend back' unto itself: 'the bending back of a force upon itself, the folding of a force, can 'only' be achieved by 'strategy': that is, it can only be achieved on the basis of the agonistic relation between citizens. The government of the self can only […] be established on the basis of a government of others' (ibid, p. 118). This sociality of the own being, the dependence of the own subjectivity of the environment the individual is embedded in and the determinative influence of the individual's relation to other citizens will be an important aspect in the end of this chapter.

As much this brief background of the foucaultian line of argumentation is the basis for the reinvention of the technologically mediated posthumanism, it is as well basis for the argument that is pursued in the end of this chapter. The individual is not only dependent on the technological influence on the individual's existence; the technological influence is embedded in this environment as well. Assessed in a different environment or at different circumstances, the outcome of the assessment would vary accordingly to the environment. Hence, in the acknowledgement of the importance of the role of technological artefacts in human existence, the role of the environment should be considered as well.

Technologies, power and subjectivity

In order to give consideration to the approach of posthumanism, especially mediated posthumanism in relation to Foucault's concept of subjectivation, this section briefly contextualizes the role of technologies in this approach. In the already mentioned dissertation of Steven Dorrestijn (2012c) this approach to power-relations is assessed through the lens of technical mediation and in terms of the influence of technological artefacts. Dorrestijn uses Foucault's stance of power-relations, influences of external forces, and subjectivation to reveal the presence and the importance of technology in the existence of the subject with the aim to restate the ability of the subject to be hold ethically responsible in regard of technological agency.

Dorrestijn outlines the influence of technological devices and techniques in the process of creating the self (fashioning the self) and the role of disciplines, systemic power-relations and technologies as external influences and reflection points for the self in forming an ethical self. Referring to the above mentioned picture of 'bend back forces': in the subjectivation approach, the individual shall be enabled to deliberately tame the loops of the bend back forces to actively shape its own form. This self-taming

shall be achieved through *subjectivation*, an approach outlined in the following section. Nevertheless, recognizing the role of technologies in human lives, the importance of the approach of technological mediation and the aspect of originary prostheticity, further approximation to Foucault's concept of subjectivation shall be investigated through the lens of technical mediation as performed by Dorrestijn (2012a/b/c) and Verbeek (2005, 2011).

For Dorrestijn, Foucault's contribution to 'philosophy of technology' in the revelation of the role of (hard) technologies for governing and fashioning human subjects (Dorrestijn, 2012a, p. 226 f.). The governing of the human subject takes place in the disciplining of the subject, in *subjecting* it to certain modes of being. In school we are taught how to use a pencil, how to use a dictionary, and, in the best cases, how to achieve knowledge on an autonomous basis. In this example, the individual is subjected to the technique of transferring knowledge and skills. Through cautiously subjecting, the individual is able to introduce skills to the mode of being. Subjectivation thus includes and describes the incorporation of capabilities. The introduced knowledge about possibilities alters the way the individual perceives its surroundings, in example how to use public transportation. This form of incorporating techniques and technology usage is comparable to the hybridization as described in the previous chapter.

For Foucault, 'hybridization' between humans and technology deserves the greatest care rather than being stigmatized as greatest danger (Dorrestijn, 2012a, p.222, referring to Heidegger's notion 'the greatest danger'). According to Dorrestijn, engaging with new technologies offers the possibility to transform the individual's 'mode of existence'. With the approach to subjectivation, outlined in the next section, the individual is able to use technologies and techniques as *angles for change*. In including the usage of technology in the mode of existence, the existence itself is transformed by the device and its capabilities. Consciously and cautiously subjectivating the self to technologies and technological devices equals thus a conscious *self-transformation*.

Hence, technological artefacts and other technologies are engaged in way quite resembling to the chance radical posthumanists saw in them. Through their heavy influence on human life, they might be used as the hook of change, re-organization of conventions, and overcoming challenges. Radical posthumanists perceive technologies as more destructive and deconstructive as the angle perceived here, but technologies are perceived as the bearer of novelty in each case. It is this aspect of philosophy of technology that is introduced to the foucaultian approach.

Foucault's approach is not arranged around 'technology' or 'technologies' in specific. Foucault has argued on behalf of 'technologies of the self', methods and techniques to transform the self in his later work on ethics:

> 'For Foucault, power is what structures society and culture. The way we live, think and act are all shaped by structures of power – just as they are shaped by technology in Heidegger's approach. […] Foucault investigates how structures of power are at work in concrete practices, objects, and ideas. Human existence does not take place in a vacuum but in a world made of ideas, artifacts, institutions, organizations that all have

> impacts on human subjectivity. […] Technology […] can be seen as one of these sources of power that help to shape the subject.' (Verbeek, 2011, p. 68)

By Verbeek and Dorrestijn, Foucault's work on subjectivation, transforming and molding of the self is set in relation to the influence of technologies, technological artefacts and techniques. The way Foucault outlines 'technologies of the self' and the process of subjectivation as ways to transform the self in accordance to the powers that shape the subject is broadened up with the notion of technical mediation to the concept that technological artefacts can, as technologies of the self, be used actively as powers of transformation.

> 'Subjects are produced by being "subjected." Specific forms of power introduce and enforce forms of normalcy and abnormalcy, which generate a specific subject. […] (P)ower is simply something that is "at work" through everyday practices, ideas, and objects and that can be operative without the explicit initiation of human agents'(Verbeek, 2011, p. 69).

The introduction of a new technology has thus already a changing character to the existence of the subject. Training and mastering the technology-usage is enabling the individual to fully incorporate the technical device in his existence, even when the device is not present. Dorrestijn is further arguing that Foucault's work can contribute positively to technical mediation theories (Dorrestijn, 2012a, p. 228). He is arguing that Foucault's approach offers insight through clear historical analysis of power-relations and theories how the human subject is governed and fashions himself. With integrating the mediating aspects of technology in subjectivation, the initiative is returned to the human actant.

> 'Foucault's call to complement historical analysis with experiment points towards an ethics of technical mediation. The analysis of how technologies govern and fashion humans becomes integrated into a broader philosophy of subjectivation. The influences of technology no longer appear by definition as a negation of human agency and freedom, but technical mediations becomes a concern and what is at stake human practices of governing and fashioning oneself and others. With this Foucault's ethical perspective brings something new which has so far been largely absent from the approach of mediation theory.' (Dorrestijn, 2012a, p. 228)

Technologies represent a form of power that influences the individual. In foucaultian terms are technological artefacts representing relations of power that form the human subject into its form. The ubiquitous presence of technological artefacts and the importance in our everyday live combined with the acknowledgment of the implications of the technical mediation approach, renders technologies as a form of power to be used as *technologies of the self*. Incorporating technologies in one's life means transformation of the self in such a way the romantic partner, friends and cultural context influences ones existence. In the next section, the mechanisms of these influences are outlined.

Subjectivation and ethics

Foucault's contribution to philosophy of technology is revealed in two figures of technical mediation, argues Dorrestijn. Foucault analyzes technical determination in power relations. A famous example is the Panopticon as described by Bentham (ibid, p.229). This example shows the ability of technological artifacts to implement power relations between prisoners and guards. Foucault on the other hand had mainly interest in the directives and instructions and analyzed the intended use of the technology rather than the actual usage. The example of instructions how to use a pencil is used by Foucault to show the implication of technology to fragment the human body into body-parts that are part of the use-plan and those who are not. In the analysis of instructions of technology-usage, Dorrestijn outlines Foucault's interest in the 'training of routines' (ibid, p.230) and the assembly of body-parts. Instructions and use-plans can thus be seen as a form of hybridization between humans and technology into a mode of existence.

The second figure of technical mediation can be found in gestures that are technically mediated. Here the pencil example can be used as well. Foucault explicitly outlines that a pencil and a rifle are not just used but through training and exercise integrated into the humans existence. Technological mediation thus seems rather a structured routine instead of an inescapable determinism. Technical mediation can thus be seen in a twofold way. Technical artifacts can impose strong power relations through mere existence (example Panopticon), technical mediation on the other hand can exist in another, more subtle way, though: In routines and learned and exercised use-plans. Here a hybridization occurs where the human (or human body-parts) become connected to technical artifacts in an instructed usage that involves both actants. Foucault argues that through exercise and training the usage of that artifact becomes integrated into the mode of existence of the human using it.

The role of technology is outlined that closely as it is conceptualized as part of the human existence. Considering ethical concerns, concepts like *technological intentionality* and *composite intentionality* thus must be included in these concerns. In Foucault, the concept of *aesthetics of existence* can be found. Here ethical behavior, including the relation to influences of powers and the own ability of subjectivation is considered an *art of living*. Ethics as art of living emphasizes rather practical skills and exercise in governing and mastering one's own course of action and how to govern and fashion oneself (Dorrestijn, 2012, p. 232). This acknowledgement of figures of technical mediation in Foucault's work can be used in relation to his approach to 'subjectivation'. Dorrestijn outlines Foucault's genealogy of ethics with 'subjectivation' as the fundamental factor.

The process of *subjectivation* here consists of four dimensions: *ethical substance*, *modes of subjection*, *ethical elaboration* and *teleos* (ibid, p. 233). Dorrestijn applies these four dimensions on the relation between humans and technology and reconsiders the influence of technology on humans from the perspective of subjectivation. This stance on behaving morally in regard of the technological mediation approach can be found in Verbeek (2011) as well:

> '[…] Foucault distinguishes four aspects of the constitution of moral subjectivity. First of all, there is the *ethical substance*: the part of oneself that is "subjected" to a moral

> code and that becomes the object of ethical work. Second, there is the *mode of subjection* that is applied: the specific ways in which people are invited to put themselves under obligation. Third, Foucault distinguishes the *self practices*: the self-forming activities that shape the ethical substance into an ethical subject. And fourth, there is the *teleology* of these practices, which consists in the way of existing we aim to realize by acting in a moral way.' (Verbeek, 2011, p. 77, highlights in original)

Verbeek uses the concept of moral agency as the intention of the agent to act in a specific way and the freedom to act in that way. The Foucaultian account of freedom and the above mentioned concept of the constitution of moral subjectivity create a method to behave morally responsible in the light of technical mediation. Through consciously applying self practices to transform the own being in an ethical manner to moral subjectivity.

> '[The] subject makes moral decisions and acts morally on the basis of its interweaving with technologies it uses. By helping to shape the practices and experiences of human beings, these technologies also help to shape the actions and decisions of moral subjects. And conversely, by finding a relation to these technological mediations, the technologically mediated moral subject can "care for itself" by actively "designing" and "styling" the way it is formed in interaction with technology. Moral agency in a technological culture comprises acting morally in a world of technological objects and taking responsibility for one's mediated moral subjectivity.' (Verbeek, 2011, p. 88 f.)

In these four dimensions of the process of subjectivation Foucault's conceptualization of the human constitution and a methodology for active engagement with that constitution can be seen along with an ethical stance of moral responsibility. Especially the modes of subjection, thus the role and influence of external powers in the process of subjectivation, and the aspect of ethical elaboration of self practices, thus the ways in which the individual (subject) shall approach teleology are important in the further development of this thesis. In the following section, the four dimensions shall be outlined briefly to enable a closer assessment.

Ethical substance is described as the part of the self that is designated to people's concerns and efforts for improvement, thus the substance that is being fashioned (Dorrestijn, 2012a, p. 233). O'Leary phrases it: 'ethical substance, answers the question '*what* part of myself should I address?'' (O'Leary, 2002, p. 134) Foucault refers to ancient Greeks where ethical behavior is a way of fashioning oneself (Dorrestijn, 2012a, p. 234). Ethical behavior is considered as an act of will for pleasure in relation to the influence of external social consequences for a person's virtuous, respectable moral character (ibid, p. 234). The aspect of social consequences are considered in modes of subjection. The ethical substance that is at stake here is the 'hybrid self', the technically mediated self. Technical mediation is thus of central importance in the issue of subjectivation. The influence of technology on humans becomes thus an integral part of ethics, as they constitute the matter that ethics cares about and gives form to the ethical substance (ibid, p. 234). In this light, Dorrestijn asks for a new hermeneutic of ethics and technical mediation. In accepting the hybrid mode of being, the concept of technical mediation and Focuault's concept of subjectivation, ethics becomes part of the *aesthetics of existence*.

> ‘Ethics of technology does not entail defending what is genuinely human, but caring for the quality of one’s hybrid mode of being. […] In the framework of subjectivation and technology, the focus is on “how technologies change what I do, what humans do”. The analysis of technical mediation becomes a hermeneutic activity of exploring the influences on human existence that are part of the boarder, ethical project of governing and fashioning one’s own existence.’ (Dorrestin, 2012a, p. 234)

The aim of an ethics of subjectivation is thus to enable human beings to master their technologies and ethically use them for fashioning their moral character in relation to others. To approach this aim the importance and influence of technological mediation must be acknowledged in the process of subjectivation. In this ‘aesthetics of existence’ ethical behavior comprises a style of being, a process of subjectivation (becoming oneself in relation to one’s technical devices) and hybrid modes of existence (ibid, p. 235). This mode of existence in the subjectivation mode is framing the hybridization with exercising technological practices and master the incorporation of use-plans into the mode of being.

Modes of subjection are circumscribed by O’Leary as ‘the question ‘*why* should I cultivate certain behaviours or attitudes?’’ (O’Leary, 2002, p. 134). This aspect of subjectivation processes the relation to already existing conformities, ethical approaches or other influences in which the individual is embedded in. This aspect of subjectivation highlights the aspect of the embeddedness of the individual and outlines the dependency of the individual’s subjectivity on the context of culture and external values. In my interpretation of this aspect, not only transcendental values such as ethical theories or religious motivations are reflected but the social context and the way in which these transcendental values are interpreted play a role. In the next chapter it will become apparent, that the immediate social surrounding of an individual is first of all more important for the individual’s subjectivity but can represent a specific interpretation of these societal values such as ethics and law. The aspect of modes of subjection thus represents the context in which the subjectivation of an individual takes place.

Ethical elaboration is framing the issue of adjusting the subject to the mode of existence. For Foucault this requires technologies: *practices of the self* that includes diet, meditation and consultation with a mentor to acquire and maintain the aesthetics of existence. Recognizing the role of technology and the hybrid mode of existence, Dorrestijn argues that modern ethics of technology could be framed as training practices for hybridization (Dorrestijn, 2012a, p. 236).

> ‘The decisive point is that behavioral constraints by technologies should not be seen as replacing moral law, but as part of the hybrid character of the self that one can problematize and actively shape. […] For a contemporary ethics of technology, ethical elaboration can be defined as training practices for hybridization.’ (Dorrestijn, 2012a, p. 236).

Ethical elaboration, thus engaging in techniques of transforming the own mode of existence is highly affected by the approach of technical mediation. It implies that the usage of technologies of any kind has implications for the own being. The acknowledgment of this circumstance has effect on all new interactions with technologies but with social environments, hobbies and practically any engagement.

The engagement is augmented in its role from a mere activity to a practice of self-transformation. The momentousness of an activity on one's own mode of being varies in effect, though.

In *teleos*, the fourth and last aspect of the process of subjectivation, the aim of the engagement in self-transformation is settled. Teleos describes the goal, the aim the individual strives for. The aspect of the existence that has been chosen as the ethical substance is equipped in teleos with an aim to strive for. This aim is achieved in a set of external conditions, the modes of subjection, and is conducted through ethical elaboration, thus the practices of the self. Here Subjectivation, as the process of creating oneself, as a process of incorporating ethical behavior, is assessed in terms of goals. Dorrestijn argues that within 'teleos' the goal and aim of ethics of technology can be found: facing the fact that humans and technology are intermingled, the 'teleos' of ethics could be to design new emerging technologies with the above given premise to accommodate 'the experience of freedom, agency and conducting oneself, by actively coping with the effects of technologies.' (ibid, p. 238).

In Foucault's concept of an 'aesthetics of existence', ethical behavior is the aim in itself and roots in self-mastery and the ability to cope with external forces such as technologies concluding in the ability to conduct oneself. The striving for a representative aesthetics of the own existence is dependent on the social construct. The individuals will to fashion and govern itself is rooted in the social construct the individual is embedded in. Here role models are given, comparisons are made, the will to govern the own existence according to socially accepted values influences the aim of the self-transformation.

The process of subjectivation is not a method that can be described but rather a description of a mechanism that works between human individuals. The acknowledgement of the above described mechanisms can enable the individual to more fruitfully engage in the mechanisms, actively shape the own existence according to the power-relations as just described. The described process of subjectivation offers a point of reflection for those who have the ability and will to reflect upon it. The addition of the technological mediation approach enriches Foucault's concept about another important factor and power that indeed needs a lot of reflection if it shall be used in an ethical manner. Dorrestijn outlines that it is important to enable people to choose whether they want to use the mediating effect of technology. Dorrestijn argues that this can be achieved through the mastery over one's own action as Foucault proposes them (ibid, p. 238). 'Teleos' in ethics of mediation is pictured by Dorrestijn in form of the mastery of technological practice. To master one's routines in interacting with technology enables the person to act naturally. To master a technological interaction is necessary to be able to master one's own actions and be fully aware of it and have the ability to decide over those actions.

Chapter 2.1 – Subjectivity and technical mediation, a chapter conclusion

> 'For methodological posthumanists, the prevalence of human/non-human couplings and networks indicates that humans do not necessarily have a monopoly on agency, intentionality or morality, which can be extended to artifacts, as something that is "delegated" to them, or inherently theirs (Latour 1992, 1999). Yet while it is clear that the freestanding intentional humanist subject cannot remain intact in this framework,

> a new, coherent model of what post-subjective subjectivity might entail is never clearly articulated by methodological posthumanists. Ultimately, it seems that breathing life into objects, so to speak, is more important for methodological posthumanists than delving into the implications of having breathed life out of subjects. […] Regarding subjectivity, like methodological posthumanism, radical posthumanism shares the critique of humanism's dualist metaphysics and contributes to posthumanist discourse two aspects of poststructuralist theory: the ethical significance that is implied in the construction of new kinds of subjectivities and the political valorization that emerges from the dissemination of the autonomous, unitary subject.' (Sharon, 2014, p. 9)

In the first chapter, the human individual has lost its status of a freestanding, autonomous human being. The individual has been acknowledged as a determined subject to mediating influences, has been denoted as a technologically mediated human being expressed through originary prostheticity. The previous solely human intentionality and agency of human existence has been acknowledged as non-existent and been replaced by a composite intentionality of human and non-human agency.

In this chapter, Foucault's approach has been shown to be similarly in the recognition of embeddedness and determinative relations to external influences: power-relations in foucaultian terminology. The subject is depicted as un-free and un-autonomous; the subject in Foucault is not free, no 'neutral substratum' (O'Leary, 2002, p. 108). Freedom, for Foucault is revealed not in liberation from - but in endorsement of these power relations. Acknowledging the external power relations enables the individual which is subjected to them to actively engage in the subjectivity it is ascribed. In this acknowledgment, the subject is given a history, a context and with this a future as well.

In the concept of a process of subjectivation, Foucault facilitated an approach to human subjectivity that enabled to assess four distinct aspects of an active engagement in subjectivity: With *ethical substance* the individual is asked to denote the part of its existence it wants to undergo transformation. In the *modes of subjectivity*, the environmental embeddedness is addressed. The individual is seated in a context of history, culture, values and similar influences that remain vague but have influence on decision making. In *ethical elaboration*, the individual is asked to engage in actual practices to engage in modes of subjectivation which promise to transform the individuals existence towards the *teleology* the individual has set for the ethical substance that ought to be transformed.

This picture of originally prostheticity, of a subjectivity of human existence as always technologically mediated seemed to have taken away self-determination and a real account on what it means to be human. Foucault's approach to subjectivation, though, is able to encourage the autonomy in human existence and restates self-determination. In describing the process of subjectivation, the mechanisms of human subjectivity in a realm of power-relations, he revealed the angle where human subjectivity enables freedom instead of deprivation.

In outlining that the role of the subject includes the ability to actively engage and encourage certain subject-relations over other, Foucault has shown how the individual is able to use this mediated state of being as an active engagement in building the own existence comparable to the work of an artist.

Using the own life as a canvas and learning the techniques to draw this life in the best possible manner, Foucault portraits as not only a free life but an ethical life.

In the field of philosophy of technology the principles of originary prostheticity and technical mediation led to the picture of a worldview dominated by technological influence on the above described mechanisms of human development. And indeed, as outlined in the first chapter are able to offer a picture of human nature as a cyborg existence. Nevertheless, Foucault's principle is broader and richer. It is clear, that the human existence is embedded in a pre-set of conditions and technology is only one of them.

> 'Elaine Graham, writing about the fear that our current complicity with technologies seems to give rise to, argues that humans have always co-evolved with their surroundings, tools and technologies. "To be human", she writes, is already to be in a web of relationships, where our humanity can only be articulated – iterated – in and through our environment, our tools, our artifacts, and the networks of human and non-human life around us. (2004: 27)'[9] Sharon (2014, p. 101f)

The very last part of this quote is the intriguing idea pursued in this thesis. We, as human beings, are indeed technological beings mediated by the ubiquity of technological artefacts that surround us, but we are situated in a social environment with highly important influences to our own well-being. The support and love of family and friends, but also negative influences of any kind determine the way in which we are able to engage with the aspects which, as outlined above, not only influence us but are us. The way in which we are suited to act in accordance with these power-relations as outlined is determined by yet another set of power-relations. Technology plays a huge role in constituting the human individual, especially with the principle of the co-evolution of humans and technology in the concept of originary prostheticity.

The following section shall show that however these are outstanding and intriguing arguments, the social embeddedness of the individual, thus a kind of 'originary sociality' is indeed as important as the technological development itself.

[9] Graham, E. L. (2004). Post/human conditions. Theology and Sexuality, 10 (2), 10–32.

Chapter 3 – Resilience Studies

> '(I)ndividual resilience refers to the processes of, capacity for, or patterns of positive adaptation during or following exposure to adverse experiences that have the potential to disrupt or destroy the successful functioning or development of the person (Masten et al. 1990, Masten and Obradovic 2006). This broad conceptual umbrella covers three distinct kinds of phenomena: (1) achieving better than expected outcomes in high-risk groups of people, sometimes referred to as overcoming the odds against healthy development; (2) sustaining competence or maintaining effective functioning under highly adverse conditions, sometimes referred to as stress resistance; and (3) regaining or attaining effective or normal functioning following a period of exposure to traumatic experiences or conditions of overwhelming adversity, often described in terms of recovery, bouncing back, normalization, or selfrighting.' (Masten, Obradovic, 2007, p. 9)[10]

Resilience studies originate in psychology and psychoanalysis (Masten, 2001) with the aim to investigate in the ability of some children to withstand adverse influences on their developmental pathway. The aim of the studies was and is to develop methodologies to positively influence children to be able to cope with negative influences, adverse situations and risk factors.

This approach of resilience studies clearly distinguishes from the hitherto presented philosophical approaches. In this psychological investigation, *empirical data* and deduced theories and hypotheses are pursued. Further are 'high-risk' and 'highly and overwhelming adversity' scenarios used as the basis for the definition of 'resilience'. Neither is completely adequate in the previously pictured mindset of postphenomenology or posthumanism. But in approaching this kind of research two issues are captured: first of all, a picture of the human individual in a network of social dependencies, influences and mutual constitution will be drawn. It will become clear that in resilience studies, although originating in a conceptually different field, a structure appears that shows the dependency of the human individual, its constitution and its stability on the environment it is embedded in. In the viability of the stability of the individual that is determined by a fragile equilibrium of influencing factors of negative and positive, moderating and mediating value, a precondition for the above outlined framework of mediated posthumanism becomes apparent. Second of all are resilience studies able to offer their divergence to the philosophical approach: the empiricism. It will become clear, that resilience studies concludes to a strikingly resembling acknowledgment to that of posthumanists: that the individual is constituted by and mediated through external influences instead of being sole, autonomous beings distant to the world.

[10] Mentioned quotes: Masten, A. S., K. M. Best, and N. Garmezy. 1990. Resilience and development: Contributions from the study of children who overcome adversity. Development and Psychopathology 2:425-444.; Masten, A. S., and J. Obradovic. 2006. Competence and resilience in development. Annals of the New York Academy of Sciences 1094:13-27.

This chapter will gradually approach these two concerns and begin with an introductory overview of what resilience studies is about. The succeeding section shall dive deeper in the purpose of the thesis and approach the role, insights of resilience studies plays in approaching the subjectivity of the technologically mediated human being.

Overview

The research in resilience has occurred in four waves (Wright *et al.* 2013). The first wave was occupied with data-collection, framing of research methodology, selection of interviewees and determination of relevant groups. In this wave, huge amounts of data and the revelation of dependencies between certain interrelated factors and human subjectivity have been reached. The succeeding second wave has been focusing on investigating in the processes that occur in regard of resilience instead of assessing the interplay of factors. In this wave, more dimensions of the resilience of an individual could have been outlined such as the dependence of factors on developmental stages or certain points of transition as trigger events for change. The third wave represents an active investigation in form of first interventive test of methodologies and the subsequent analysis of the data and the refinement of the methodology. This led to more data, a clearer picture and the revision of certain views and definitions. In the fourth, most actual stage a broader range of disciplines such as (epi-)genetics are introduced to the range of possible assessment tools of the investigation.

Resilience studies originate in psychology and psychoanalysis and are methodologically quite differently arranged than the above described philosophical approaches in human-technology-relations, what renders them intuitively hard to compile with the post-phenomenological school of thought. To outline that resilience studies show resemblances with exactly this discipline is the aim of this chapter. To be able to show these resemblances, the past decades of resilience studies are presented in a form that is preferred by the researchers themselves. According to Wright, Masten and Narayan (2013) resilience studies have occurred in four distinct waves. These waves are briefly outlined to be able to highlight certain common features of both resilience studies and post-phenomenological research. Next to that are methods and approaches used by the researchers displayable and respectively how they developed over the course of the years. The investigation in resilience studies shall thus stay close to Ann S. Masten, a researcher at the University of Minnesota who has shaped and accompanied the development of resilience-studies since its early rising in the 1970s. A group of researchers has been interested in the phenomena of children developing well under adverse circumstances with the aim to “inform theories of etiology in psychopathology and to learn what makes a difference in the lives of children at risk that could guide intervention and policy” (Masten, 2001, p. 227). Since this early grouping of scientists researching into the properties and factors of ‘invulnerable children’, the above mentioned four waves of resilience-research have been described. Each wave represents different steps in the development of resilience research. Each wave shall be introduced separately, to briefly draw a holistic picture of resilience research.

Chapter 3.1 – The four waves of resilience studies

[11]*Wave I*

The initial wave has been focusing intensively on the description of phenomena and concepts of resilience with the aim of drawing a clear picture of what this phenomenon of 'resilience' is and where and why it occurs. In other words, the first wave studied the correlates between predictors of positive outcome and adaptation and the presence of risk factors and adversity. Originating in the USA in the 70s, initial research was colored by strong individualism and respectively was the first wave mainly focused on the individual contrasted to its environment. This phase of resilience studies may thus be vaguely compared to essentialist approaches as described above. Accordingly are two styles of approaches separable: firstly, a person focused approach wherein resilient and maladaptive individuals are analyzed in comparable circumstances. Individual differences are hereby outlined and 'inner capacities' are conceptualized that foster and impede resilience. Secondly, variable focused approaches have been conducted that analyzed the personal and environmental variables which have occurred throughout the vast scale of samples. The combined findings led to the compiling of the 'short list' of promotive and protective factors (Wright, Masten, Narayan, 2013, p. 21).[12] This list has proven valuable in the first and following waves as reference point for fundamental adaptive systems supporting human development.

The consolidation of the descriptive work and the analysis of already gathered data has led to a provisional definition of resilience as a *positive adaptation in the face of risk or adversity*. With a closer look, this definition is based on two judgments (ibid, p. 16): resilience occurs solely in response to or next to adversity. Adversity is hereby judged to be a threat to a normal, healthy development. The behavioral pattern described as resilience is thus judged to be a positive adaptation and a return to or maintaining of a normal pathway of development. In order to give consideration to the judgments taken in the approach to resilience, a clear terminology is important. The following list provides the most important terms which are important for this essay:

> *"Adversity* - Disturbances to the function or viability of a system; experiences that threaten adaptation or development. […]
>
> *Risk* - An elevated probability of an undesirable outcome.
>
> *Risk factor* - A measurable characteristic in a group of individuals or their situation that predicts a negative outcome on a specific outcome criteria. […]
>
> *(Asset or promotive) factor* - A measurable characteristic in a group of individuals or their situation that predicts a positive or desirable outcome, similarly for low and high levels of risk. […]

[11] This and the following waves are described on the basis of Wright, Masten, Narayan, 2013
[12] As referred to multiple times in this chapter, the list will be included in the appendix

Developmental tasks - Psychosocial milestones or accomplishments expected for people of different ages in a given historical or cultural context, often serving as criteria for judging how well a person is doing in life."

(Highlights added and fragmentary cited from Wright, Masten, Narayan, 2013, p. 17[13])

These terms define the context in which resilience is approached in wave I. Resilience, or rather resilient behavior, is understood here in relation to the ability of performing developmental tasks despite the exposedness to adversity or the presence of risk factors. The first wave was composed of variable studies of groups of children in regard of the above presented terms. Children and their environment have been questioned and surveyed to compile sets of data. The results of succeeding assessment showed that resilient behavior cannot be understood as a trait that some individuals possess and others lack. Resilient behavior rather demonstrated to be a mixture of various factors combined with the individual's ability to negotiate between the internal and external risk factors and promotive factors to a positive outcome. The results showed further that some factors weight more than others. For example: the family, as a central, natural and available role in a child's life, is the most complex non-corporeal factor. It can positively foster resilient behavior through support, provision of role model behavior and positive reinforcement but can also be a negative influence through absence, mistreatment, abuse or violence. Combined with other external influences such as environment (neighborhood, school, society), culture and similar, the individual's inner capacities such as self-control, intelligence and single-mindedness are shown to be important for the emergence of resilient behavior.

Compiled in the above mentioned 'short list'[14], the first wave produced a vast network of important influences and characteristics. It has further been shown that such positive and negative factors are highly context-dependent (ibid, p. 22 ff.). Age, as a simple example, has shown to be an important factor as at different ages, different aspects of life are prone to negative influence or responsive to promotive factors. In comparable situations and adversities a child at early age is in another way prone to certain influences and responds well to different assets than older children (ibid, p. 24). Additionally have analyses shown that risk factors seldom come alone. A bad neighborhood, as an example, is likely to provide the risk factor of drug-availability or violence. It has become clear, that the mere assessment of negative or positive factors and characteristics will not be able to provide a complete picture. This has evoked the second wave, where the focus was shed on *how* resilience is constituted instead of assessing *what* it is constituted by. In summary, the struggles of the first wave of research have outlined many structures, linkages, dependencies and factors which are important to understand the context in which resilience works. The second wave illustrates the investigation in the processes that picture the complexity of the network between the outlined factors.

As the first wave represents the origin of resilience studies there are inconsistencies with the approach pursued in this thesis. Two outstanding issues catch the eye: first of all, the initiative premise that 'resilience' is handled as a trait that some humans possess and other do not, appear as essentialist.

[13] Find the complete list in the appendix

[14] See Appendix

It appears that the following waves are built upon these proposition. It will become clear that the initial essentialist concept is reevaluated in later wave, though. This matter will be of importance in later sections. The second issue can be seen in the definition of 'resilience' as only apparent in the presence of adversity. This conceptualization of 'resilience' as reactant behavior is fixated in the framework of resilience studies. In this thesis, the term 'resilience' or rather *resilient behavior* will be considered in a different light, though. It will become clearer in later sections, but in the light of radical posthumanism, the influence of technology can be considered as the permanent presence of external pressure on the stability of subjectivity.

The issue of the stability of the individual resonates with the main concern of this thesis, the social embeddedness of the individual and the role of subjectivity in this relation. As outlined in the previous chapter, Foucault offered an approach that imbeds human subjectivity in a framework of mutual influence and power-relations. The individual is conceptualized as the center and as a part of the web of interactions and influence. In the first wave of resilience studies, especially in the recognition of the 'short list' of influences, the foucaultian approach and the interest of resilience studies in the constitutiveness of the individual's subjectivity in regard of social influences is remarkably resembling. But before these resemblances will be considered further, the insights of the next waves will be outlined.

Wave II

The second wave of resilience studies has focused on *the processes that constitute resilience*. 'Rather than asking questions about why a child is resilient, questions are asked about bidirectional connections between the child and his or her context.' (ibid, p. 23) The research of the second wave has investigated in the complex, systemic interactions that influence human development. The approach of the second wave is distinguished by the first wave as it *contextualizes* the role of factors. Protective processes vary in influence on human adaptation, dependent on contextual specificity. Specific groups adapt differently to stressors, thus is it important to explore which factor is protective for which individual at what time. The role of the context is especially interesting if one includes the role of culture, religion and societal influence on both the individual and its group.

Culture is a social product that provides humans with a dynamic but stabile context that offers many protective factors. Traditions, community support as well as a religious context offer a wide range of protective factors (ibid, p. 26f.). The range of research is opened to cross-culture analysis by acknowledging the socio-cultural influence. Individual capacities vary in their value dependent on the culture expressed in the validation by important systems. Some characteristics may be seen valuable in some cultures but are seen as disruptive in others. The role of factors on the subjective level such as intelligence, self-regulation and socio-emotional skills is also prone to cultural influence (ibid, p. 27). Further, institutions such as family, environment and school are clearly colored by cultural and religious influences.

In the context of the process-focused research, universal, fundamental human adaptation systems (Masten, 2007, p. 925; Wright *et al*, 2013) are hypothesized influenced by the uprising of the

developmental systems theory by Bronfenbrenner in 1979 and others (ibid, p. 22 f.). The concept of human adaptation systems is that these systems keep development of human subjects on course and facilitate recovery from adversity, while being versatile and responsive to a wide range of challenges. To these systems count inner capacities such as development of attachment relationships, moral and ethical development, self-regulatory systems for modulating emotion, up to neurobehavioral and information processing systems, as well as external, supportive systems such as cultural context, family networks, religious organizations, and other societal systems. It follows that risk factors that threaten these systems are consequently threatening resilient behavior (ibid, p. 22).

The second wave has thus focused on moderating processes as well as mediating processes. These processes are analyzed in both context and the point of development. It has been shown that children of young age are more adaptive to certain adversities where older groups show less adaptive resources and *vice versa*. This is based upon contextual dependencies. Young children are highly dependent on their family whereas older children have had more time to grow independent (ibid, p. 23). These processes are analyzed in assessing healthy and maladaptive *pathways* of children exposed to adversities over time. The data used for these analyses have been gathered in longitudinal studies on interpersonal relationships. In this context, it is shown that early adversities can have a delayed impact although previous inquiry has shown resilient behavior (ibid, p.26).

Results show the importance of stabile life situations such as having and engaging job, a supportive spouse, especially when a family is planned or present. It is further shown, that turning points, such as a change of school system, change of job situation, entering a relationship or parenthood as well as immigration, can offer the opportunity of change in an adaptive process, both for the better or the worse.

The research of wave two resilience studies has been focusing on understanding the relation between the individual and environmental systems. The special attention on external systems such as schools, society and culture are based on two aspects. First of all, it is rooted in the methods that researches have been focusing on the external systems as these are easier to assess and to question. Further are these systems open for manipulation in the form of interventive steps. Schools can be reformed and societies can offer specialized institutions. Instead, the light shall be shed on the inner capacities and systems. The results of wave two studies show multiple evidence that inner capacities such as high self-esteem and positive future expectations (p. 24), good cognitive skills, socio-emotional sensitivity, and the ability to self-regulate (p. 27) are key-elements that trigger important developmental pathways. The conjoined concept of both resilience and post-phenomenological technology mediated subject theory is able to move the lever at this point.

Concluding, it is outlined that it is dangerous to view ‘resilience’ as a trait but that it is important to think of resilience as the interplay of various processes and systems that influence each other and the individual. Adaptation to adversity and risk is embedded in rich and dynamic systems of interaction, including society, school, family, neighborhood, community and culture.

The essentialist approach of resilience studies as pictured in wave I turned into an approach more aware of the influences and importance of influences between negative and positive factors. It has been shown that the individual's ability to react 'resilient' to negative influences is dependent on the presence of stabilizing factors and the absence of negative factors. Especially the notion of 'human adaptation systems' offers an interesting acknowledgement of human subjectivity and the role of so called 'hot spots' for multilevel integration. Here individual subjectivity is interconnected to systems that may help or enable recovery and resilience. In the later section on human adaptation systems this will be elaborated more closely.

Wave III and IV

Where the first wave provided profound groundwork on the individual inner factors as well as on the influencing external promotive and protective factors, the second wave added a systemic, holistic analysis with a special focus on the developmental pathways and systemic interactions resulting in the list of 'hot spots' for multilevel integration. The third wave assesses the previous findings and hypotheses in active intervention and method-testing. Since the beginning on, the aim of resilience research has been focusing on fostering resilience in children that are exposed to adverse situation, additionally to programs that are aiming at the minimization of adversity in general (p. 27 f.). The profound analytical work of the previous waves has been tuned to possible interventive methods as crystalized in wave two. As briefly pictured in the previous section, there are factors that are more manipulatable than others. In order to achieve positive intervention, various projects have attempted to foster normal, healthy development in children prone to adversity or living exposed to increased density of risk factors (p. 28). This movement has led to projects with the aim to minimize negative influences such as inequalities, poverty, missing access to schools or similar aspects of adversity. Resulting analyses show that fostering success and competence reduces vulnerability to risk factors significantly. Hereby has been shown that the previously mentioned 'short list'[15] of key factors is in high accordance to the succeeding analyses of the active intervention (p. 28). Mediators and moderators of change as found in the active intervention resemble the 'short list' that has been concluded from the analysis of observation data.

Actively intervening in the lives of children exposed to adversity and risk such as reducing risk factors, boosting resources and the nurturing of relationships can be seen as protective intervention. Findings suggest that it is hereby important to consider 'strategic/effective timing'. As argued in the second wave, developmental milestones and turning points in life offer windows of opportunities of change, for the better or worse. Interventive steps are thus effectively timed more efficient when tuned with such events as end of school, job entering or similar. The thus consciously timed intervention shows to be more effective and less costly. It is mentioned that further research and a better systemic understanding of adaptive processes in regard of life's turning points may lead to even more effective interventive methods.

[15] For detailed view see appendix, table 2.2

The syndication of findings of wave one/two with findings of wave III allows the field of resilience research to develop more fruitfully. The combined analysis of each waves showed, that inner capacities such as self-regulation and modulation of emotion, arousal and behavior, is positively correlated with school accomplishment. Another set of analysis outline the importance of family relationships. In this regard are parental skills of high value for later mediation of achievement and the child's risk management. An exemplary project that is attached to this factor is the Parent-Management-Training-Oregon (PMTO) (p. 28). Here young or prospective parents are trained for better parenthood. This paragraph shows again that the presented interventive steps are aimed at external factors. Interventive methods to foster inner capacities seem to need the detour over external factors. As can be seen in this quote:

> 'Experimental intervention designs can provide a powerful test of hypotheses about how resilience occurs, particularly when the process of change is specified (e.g., parenting or attributional style), the intervention is tailored for specific needs and targets changes in this process, and the change processes affect subsequent change in the targeted behavior of an individual or system.' (p. 28)

Specific interventions in inner systems are not feasible to conduct[16] and are thus triggered in influencing external and directly neighbored systems.

In the current, fourth wave, resilience research is actively nurturing the, in wave II initiated, broadening of the scope and acknowledgment of the holistic character of resilience. Current researchers are, next to the vast group of continuing projects, focusing on the newly available aspects of genetics, epigenetics as well as neurobiological adaptation, brain development and behavioral sciences. Resilience science of wave IV is attempting to include findings of these disciplines in the analysis of resilience factors and are looking for promotive factors and processes.

Researchers in resilience studies have been focusing on the possibility of actively intervening in human development to foster adaptive behavior, minimize risk factors and enabling positive outcome despite adverse circumstances. The research pathway has led away from an individualistic perception of a subject, as well as turned away from the perception of 'resilience' as a trait that one can either possess or lack. Instead have resilience studies outlined a picture of a mediated subject, a dynamic system dependent on both inner precursors as well as outer influences by complex, systemic processes. It has shown ways to actively intervene on cultural, societal, school and family levels as well as the promotion of competence and self-regulatory skills on a personal level. This development completes the holistic picture of the subjective individual and represents the perception of a mediated subject as to be found in resilience research.

The four waves

In the above brief introduction of the four waves of resilience studies it became apparent, that the approach of resilience studies is hardly compilable with posthumanism or postphenomenology in a

[16] To my knowledge

direct way. On the other hand has it been clear that there are many resemblances and helpful insights in regard of the human subjectivity. It is the focus of resilience studies to investigate in the role of social environments, of helpful factors and processes, of mediating and moderating influences and of *human adaptation systems* towards their ability to enable human beings in adverse situations to recover well from or adapt in a fruitful way to these adverse influences, in short: being resilient.

The ultimate aim of resilience studies can be framed in the respectable goal to help social institutions to foster their already existing institutions and assisting offers for those in need of them. They approach this on the basis of their discipline and have developed a broad basis of knowledge to facilitate that aim. In this thesis I want to lean on this broad basis of empirical knowledge.

The next section shall continue to outline the grommets of helpful insights where the hooks of posthumanism could anchor. Here it is shown that the insights of resilience studies enable to perceive the human individual in its vulnerability on a social level. The human individual can be seen as constituted by its social surroundings. This will be pictured along the concept of human adaptation systems and radical posthumanist reasoning, mixed with the concepts of technological mediation theory and the subjectivation approach.

Chapter 3.2 – Technologically and socially mediated human subjectivity

It is important to see this brief recapitulation of the origination and development of resilience studies as presented in four waves, to acknowledge the dynamic progress in resilience studies. It is further important to apprehend the development of knowledge in this genesis. The original definition of 'resilience' changed from the first wave conception of an 'ability' or 'trait' of an individual to withstand external adversities better than other, comparable individuals to the second/third wave conception of the acknowledgement of the importance of the stability of supportive systems such as the family, close friends or other personal vicinities in relation to negative influences and destabilizing factors. The most recent definition of resilience describes the stability of *human adaptation systems* towards negative influences and risk factors. The essentialist, individualistic definition of 'resilience' changed into the perception of resilience as a systemic character of interdependent entities and relations where the individual represents the central knot. In this new conceptualization, the well-being of an individual is constituted by the crucial adaptation systems it is embedded in.

Both resilience studies and phenomenology performed a resembling change in their conceptual development. Each discipline originated in a humanistic, essentialist picture ('first wave' or realism) and concluded to a systemic understanding of the human individual as a subject to external influences (third wave or postphenomenology). The 'subjectivity' of the individual in regard of external influences is resembling in both approaches but each approach highlights different entities to which the individual is subjected to and constitutively dependent on.

In outlining the role of human adaptation systems in the grasp of individual subjectivity, this section will outline that subjectivity in regard of technological influences is hooked to multiple layers of social influence. The aim of posthumanism originated in trying to understand the relation between the

human individual and the non-human actant. In recent iterations of posthumanism it can be seen that there is more to the non-human actant, even that there is no real distinction between the two. This section will clarify that there is more to the human actant than its technologically mediated subjectivity in regard of the non-human actant. In human adaptation systems it will become clear that the human actant is subjected to other environmental actants as well and that this constitution cannot be left unconsidered in considering technological constituting of the human subject.

Human adaptation systems

> 'The fact that many of the promotive and protective factors that were identified in the first wave appeared to facilitate development in both high and low risk conditions suggested the importance of fundamental, universal human adaptation systems; these systems keep development on course and also facilitate recovery from adversity (Masten, 2001, 2007). Examples of these adaptive systems include the development of attachment relationships; moral and ethical development; self-regulatory systems for modulating emotion, arousal, and behavior; mastery and motivational systems; and neurobehavioral and information processing systems. Other systems involve the broader cultural context and consist of extended family networks, religious organizations, and other social systems in the society that offer adaptive advantages. These systems are versatile and responsive to a wide range of challenges, both normative and non-normative. If the major threats to children's adaptation are stressors that undermine the development of these basic protective systems, then it follows that children's ability to recover and to be resilient will be highly dependent on these systems being restored.' (Wright *et al*, 2013, p. 22)

This quote highlights in a very dense way where resilience studies offer insight in the constitution of human existence in regard of technological development. It portrays the human individual's ability to cope with adversity as a systemic, multi-layer process that is highly individualistic and highly context-dependent. In this, it highlights the subjectivity of human individuals as being subjected to the environmental influences. The individual's ability to oppose negative influences such as risk factors and adversity, thus the way in which it is subjected to these negative influences, is dependent on other systems the individual is dependent on: human adaptation systems consisting of networks and systems of moderating and protective factors. The role of technological artefacts in this aspect will be considered later in this chapter next to the dependency of human adaptation systems on adversity. In the following section, human adaptation systems shall be outlined a bit clearer.

As briefly portrayed above, in resilience studies multiple approaches are pursued and portrayed. In referring to 'human adaptation systems', different of these approaches are comprised and the human individual is pictured as a social being which is embedded in complex levels of social systems.

> 'Resilience can be defined as the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development (Masten

> 2011, 2012). Resilience is a dynamic concept that can be applied to many systems across scales, including systems within a person (e.g., stress-response system, immune system, cardiovascular system), the whole person as a system, a family system, a community or communication system, or an ecosystem (Masten 2011, 2012).' (Masten, Narayan, 2012, p. 231)

The ability of an individual to withstand adversities and risk factors, recover from traumatic experiences or develop well under aggravated circumstances is dependent on the ability of multiple systemic levels that support and stabilize the individual to cope with the adversity. Research in resilience studies shows that for this definition of resilience, multiple aspects need to be considered. The kind of adversity or risk an individual is facing asks for different resources that the individual may draw from. The kind of supportive system an individual is drawing from is dependent on the age and life situation (Masten, Narayan, 2012, p. 240 ff.). In comparable situations and adversities, a child at early age is in another way prone to certain influences and responds well to different assets than older children (Wright *et al*, 2012, p. 24). Changes of the *status quo* of a person (such as change of educative institution, job, relationship) may function as a trigger to overcome past adversities, turn down present risk factors or deal better with adverse circumstances or *vice versa* lead to deterioration of the situation (ibid, p.25).

Compiled in a 'short list' (ibid, p. 17), the first wave of resilience studies produced a vast network of important influences and characteristics. Additionally have analyses shown that risk factors seldom come alone. A bad neighborhood, as an example, is likely to provide the risk factor of drug-availability or violence. Culture is a social product that provides humans with a dynamic but stabile context that offers many protective factors. Traditions, community support as well as a religious context offer a wide range of protective factors (p. 26f.). The range of research is opened to cross-culture analysis by acknowledging the socio-cultural influence. Individual capacities vary in their value dependent on the culture expressed in the validation by important systems. Some characteristics may be seen valuable in some cultures but are seen as disruptive in others. The role of factors on the subjective level such as intelligence, self-regulation and socio-emotional skills is also prone to cultural influence (ibid, p. 27). Further, institutions such as family, environment and school are clearly colored by cultural and religious influences.

The concept of human adaptation systems states that these systems keep development of human subjects on course and facilitate recovery from adversity, while being versatile and responsive to a wide range of challenges. To these systems count, as briefly portrayed above, *inner capacities* such as development of attachment relationships, moral and ethical development, self-regulatory systems for modulating emotion, up to neurobehavioral and information processing systems, as well as *external*, supportive systems such as cultural context, family networks, religious organizations, and other societal systems. It follows that risk factors that threaten these systems are consequently threatening resilient behavior (ibid, p. 22).

As pictured above were the change from the first to the second wave marked through the acknowledgment that not only single factors influence the ability for adaptation as they are described

in the short list (see appendix a) but systemic processes. The investigation in these multilevel dynamics lead to the compilation of a list of hot spots of multilevel integration (see appendix b). The individual is hereby not only acknowledged as being subjected to factors that have an impact on how one is able to adapt to external influences but that these factors are as systemically constituted as the individual itself. It follows that the human individual's subjectivity can only be understood in terms of multilevel systemic processes.

It is thus not the individual alone that has the resources to cope with adversities but it is the entirety of systems an individual is embedded in, that displays a certain readiness for resilient behavior. The 'individual' is according to this concept not able to be resilient on its own, the resources of adaptation systems an individual is able to draw from (actively) or has available (passively) constitutes the individual's resilience. The individual and its stability and well-being is subjected to these external entities in form of systemic structures and systems.

In the light of this conceptualization of 'resilience' as a statement of the readiness of the human as a complex, multilayer system, to react to adverse influences in a positive way, the account of 'subjectivity' is interesting to question. The individual is subject to various layers of influences which are in constant mutual interaction. These layers in a whole constitute the ability of the individual to adopt dynamically to adverse situations and remain or regain well-being. The role of the individual remains passive in this conceptualization of resilience as a systemic characteristic. The role of inner capacities are reduced to traits and capabilities but are not considered as an active actant in the context of adversity. Resilience studies focus on the roles of factors, positive and negative, on the role of institutions and the relations and processes between these factors, but the role of the human individual is almost reduced to floating between these influences.

Chapter 3.3 – Originary sociality

In this chapter, psychology-based 'resilience studies' have been presented with the aim to show that the human individual is not only constitutively determined by technological mediation but by the social context as well. It has become clear that through the lens of resilience studies, the human individual is dependent on inner and external factors that constitute the way in which the individual is able to respond to risk factors and adverse situations and incidents. It has become clear that the human individual is constituted by so called 'human adaptation systems', a concept of intertwined factors and conditions that environmentally influence the human individual. This systemic view results in a picture of human subjectivity that surpasses essentialist conceptions of 'human existence' and 'social environment' and pictures the human individual's inner capabilities as intertwined with external adaptation systems. This picture of a co-constitution of human and social aspects is faced with one outstanding problem: it is based on the response to adversity. Next to that issue that will be addressed in the next section, the drawn picture highly resembles the intertwinedness and co-constitutedness of the postphenomenological technological mediated human individual. This is no lucky concurrence, of course. Both approaches investigate in human subjectivity, in the way in which the individual is embedded in its environment. Posthumanism is focusing on technologies, resilience studies is focusing

on the social environment and adversity but both develop in the course of their decade-lasting investigations a picture of an embedded individual that is not separable from this embeddedness. In the following sections these resemblances and the problematic issues which still occur shall be reconsidered in closer detail and the role of technology shall be outlined clearer in the context of resilience studies.

The novelty in the amalgamation of postphenomenology and resilience studies can be seen in the common denominator as the account of individual subjectivity to external, constitutive influences. To conclude this chapter this conclusive section shall reflect on the role of resilience studies in regard of mediated posthumanism. In this context, both problematic and beneficiary issues between resilience studies and mediated posthumanism shall be discussed. Following that, the role of technological artefacts, both in resilience studies and in mediated posthumanism shall be debated briefly.

Problematic issues in resilience studies

Rooted in the distance between the disciplines of psychology and philosophy, both in frameworks and in methodology, naturally there are inconsistencies. This thesis is based on the framework of philosophy of technology, especially on posthumanism and due to this, the inconsistencies appear rather in the realm of resilience studies than in the subject area of philosophy. In this chapter on resilience studies two issues, the methodological variation and the conceptual approach to the human being are the most apparent conflict areas. Philosophical methodology consists in methods of reflection and tools of the mind whereas in the presented psychological approach questionnaires, data-collections and –analysis are important. But foremost important are conceptual differences in understanding the human being. It is the huge accomplishment of mediated posthumanism and postphenomenology to acknowledge the ontology of the technologically mediated human individual and the accomplishment of subjectivation theory to outline the role of subjectivity in the complex system of influences and the included regaining of self-determination and agency. These achievements in a conceptual approach are missing in resilience studies. As soon as the problematic issues of the juxtaposition of resilience studies and posthumanism is discussed, the beneficiary perspective that can be gathered in the examination of resilience studies through the lens of mediated posthumanism shall be outlined.

Resilience studies appear with three problematic issues. *First* of all are resilience studies based on a partially essentialist understanding of human agency. *Secondly*, resilience studies are built around the premise that ‘resilience’ is only apparent in the presence of adversity. As outlined above, this issue is already mentioned in resilience research as the first of the two judgments on which the definition of ‘resilience’ is based on. The second of the two judgments represents the *third* problematic issue: resilience is defined as the ability to return to or remain at a healthy and normal state of being. This definition includes judging what counts as normal and healthy. These three issues: subliminal essentialism, definitional dependency on adversity, and normative judgment on normalcy are approached in this section.

The first problem, the critique of the subliminal essentialism is held by me. In the first definition of resilience and in the first wave of data-collection and initiation of longitudinal studies, an essentialist approach to 'what it means to be human' appears to be interline present. I point at the understanding of resilience as a trait, a characteristic that a person either inheres or lacks, but also on the way in which resilience studies approach human subjectivity. The first issue 'resilience as a trait' is refused by resilience researchers themselves, but the issue of an essentialist approach to human subjectivity is a bit harder to address. In the first waves, human subjectivity is approached as separated from the environment. The pattern of critique here can be resembled to the humanistic critique on liberal posthumanism. The 'person focused' and the 'variable focused' approaches differentiate between the individual and the external. These first wave approaches to the issue of resilience are investigating in the relation between the environment and the individual instead of the complex system both represent. Subjectivity is understood in this context as something essential to the human existence influenced but not constituted by external influences. These investigations have led to important tools for later iterations in the field, but are nevertheless based in an essentialist understanding of human subjectivity.

As outlined in the recapitulation of the waves of resilience studies, resilience studies are transcending these essentialist roots of their original research. Although not as thoroughly as postphenomenology, resilience studies employed the conclusion that the essentialist comprehension of the individual's subjectivity is not feasible but that the individual is constitutively subjected to a systemic network of influencing factors that constitute the way in which the individual is able to react to certain influences. This acknowledgement has led to the complex understanding of 'human adaptation systems' as briefly presented above.

Human adaptation systems as presented above, represent the way in which the human subjectivity in regard of the complexity between interrelated inner capabilities and external moderating and protecting factors is able to turn this essentialism down and replace it with a more systemic, co-constituted understanding of an originary sociality, a co-constitution of inner and outer factors, of the multitude of aspects of human existence. In human adaptation systems, the outstripping of the essentialist roots can be seen.

The lacking of a clear understanding of the human individual as *co-constituted* by social factors is still a bit blurry in resilience literature as this angle of interpreting human existence and subjectivity is not akin to psychological but rather to philosophical perspectives. In resilience studies rather practical aspects and relations are portrayed and the philosophical dimension is understated. This philosophical understanding of the human subjectivity is one aspect, resilience studies may adapt from philosophical reasoning when it comes to understanding the human individual's constitution.

The second problematic issue in resilience studies is the close definitional linkage of resilience studies to 'adversity'. This close focus on adversity slightly blurs the informative value that is pursued in this thesis as it deflects the insight of the dependency of the individual on the social embeddedness

to the exceptional condition of present adversity. To approach this, I like to recall the definition of adversity in resilience studies:

> '*Adversity* - Disturbances to the function or viability of a system; experiences that threaten adaptation or development.' (Wright *et al*, 2013, p. 17)

As it has become clear in the first and second chapter, the approach of technological mediation and originary prostheticity place the human individual in constant alteration and transformation due to the ubiquitous presence of technological artefacts. The approach to this technicity of human existence is approached in subjectivation where the conscious self-transformation of the own subjectivity enables to restate self-determination and aware agency.

Acknowledging this technicity of human existence and the need for subjectivation to regain control over this technicity in regard of the social embeddedness of the individual represents the core-issue of this thesis. The *dependency* of 'resilient behavior' on the presence of adversity is abrogated in the acknowledgement of the constant struggle of the individual to engage in subjectivation in regard of technological mediation. To bring the demand of the subjectivation approach back to mind that only in cautiously and consciously subjectivating to technical mediation relations, these relations can be captured to an extent in which the subjected individual is able to attain a relational freedom. Put bluntly, in this foucaultian argumentation, the individual is un-free and subordinated to the intentionality of technological artefacts when it is not consciously subjectivating itself to this technology. Although this rough interpretation of Foucault's concept of freedom is inadequate it is able to sketch the picture of the dependency between the technologically mediated subjectivity and the concept of adversity in resilience studies.

The concept of a constant struggle is reflected in the above presented arguments of radical posthumanism as well. Technology represents an aspect of human existence that inheres the ability of change, construction and deconstruction. In the terminology of resilience studies, 'technology' represents a factor that can both positively foster human adaptation systems or negatively pose a threat to human adaptation systems. In terms of the subjectivation approach this factor would indeed most importantly be the subject of subjectivation to obtaining or attaining freedom. Subjectivation represents an answer to the elusiveness of this technology-factor and helps to turn the possibility for threat into a fostering element of existence. The concept of human adaptation systems on the other hand offers the ability to reflect on the effects of technological development further than in the present approaches. For this endeavor, the concept of human adaptation systems can offer societal interdependencies, the influences of contextual aspects such as age, social environment, life-situations, and many more issues as can be found in appendix a and b. Human adaptation systems can offer a conceptual framework for subjectivation methodology to reconsider the implications and the involved systems that need to be taken into an account in the process. Dorrestijn's inclusion of technical mediation theory is additionally adding depth and accuracy to the overall issue of individual subjectivity.

Acknowledging this last amendment, *the third problematic issue* in resilience studies, the judgment of what counts as normal and healthy can be addressed. This judgment on the grade of well-being is a weak spot in resilience studies. Judgments about ways to spend the life from an outside perspective are easily understood as patronizing. The aim of resilience studies is to offer helpful institutions or strengthen promotive and moderating factors while reducing negative influences. This way each citizen is offered to use these abilities. The main concern in this approach is to not only offer the ability to go to such institutions but to enable the concerned persons to apprehend these offerings.

This thesis focuses on the issue of subjectivity. From this angle, the issue of a patronizing appearance is contextualized differently. This problematic issue can be avoided in remembering the aim in the subjectivation approach, though. Here, the individual are to be enabled to regain self-control and self-determination in consciously engaging in the own subjectivity. This principle can be applied to resilience studies as well. In the composite acknowledgment of subjectivation as a method to approach the own subjectivity in regard of technological mediation as possible threat to the individual's well-being and the aim of resilience studies to outline human adaptation systems as a possible way to sustain a healthy and normal pathway of development, a median can be found. The acknowledgement of the existence of human individuals as being constituted by technological artefacts and human adaptation systems allows to argue for the importance of a balance in life between the ability to subjectivate properly and having functional adaptation systems. If both is properly balanced, the individual may have a proper life without the need for perfect subjectivation and high ethical self-awareness nor perfect developmental pathways.

Beneficiary insights in resilience studies

The approach of resilience studies to investigate in the fundamental ability of the human being to adapt to adverse situations, to flourish in the presence of burdensome influences of circumstances, and to recover from traumatizing events has drawn a picture of the human individual as the product of a systemic, interrelated network of its personal relations, social and cultural influences, and individual inner traits. In the light of the presented subjectivation approach by Foucault where human subjectivity is introduced as central to the human embeddedness, the human individual can be understood as socially mediated in the light of social influences as outlined by resilience studies. The influences that are described by resilience studies, picture the human individual as dependent on, as constituted by a network of factors and influences in its ability to be resilient. It is the subject to these social influences. This chapter outlined the subjectivity of the human individual in regard of these social influences and in regard of the resilience of a human being towards negative influences and its ability to obtain or regain effective and normal functioning. The construction of this systemic view of the human sociality around the presence of negative factors and adversity shall not hinder the understanding that can be achieved from this perspective.

The most prominent concept of resilience studies presented in this chapter is the notion of *human adaptation systems*. In this concept, the findings of resilience studies revolving the embeddedness of human subjectivity in systems of positively and negatively influencing factors is combined. Human

adaptation systems offer an understanding of the complexity and importance of the role of social influences. This importance is reflected in a closer look at the subjectivity of the socially mediated individual. It is outlined, that the human ability to cope with past or present risk, directly or indirectly administered, only through the given stability of the holism of human adaptation systems. It follows, that an individual with a good working set of human adaptation systems is able to confront threats to its well-being with a higher probability than those individuals with suboptimal functioning human adaptation systems.

This concept of a socially mediated human individual based on a concept of human subjectivity constituted by social influences in systemic interrelations as portrayed in human adaptation systems can be fruitfully arranged in line with Foucault's concept of subjectivation. As outlined, in the way Foucault's concept of subjectivation has been brought in line with postphenomenology and even further has been offered as a hook for mediated posthumanism as a way to retain self-determination in the context of technical mediation is indeed focusing prominently on the influences of technological artefacts. Nevertheless is Foucault's presentation not based on the constituting influence of technology alone but focusses on power-relations and the aspect of human subjectivity in general. This subjectivity can be addressed in this outline of resilience studies as well.

In mediated posthumanism, the account of 'subjectivity' in posthumanist reasoning, the approach to human-technology relations and the way in which technological artefacts, especially new emerging biotechnologies are influencing human existence is introduced as an approach that is able to restore the account for self-accountability and self-determination that has been figuratively lost in the acknowledgment of hybrid intentionality. In regard of the momentousness of the concept of subjectivity in mediated posthumanism, the above briefly outlined embeddedness of human subjectivity in a social context and the constitutive role of the social context on the ability of the subject to cope with possibly negative influences on the human individual, is formative for the concept of 'subejctivity' and subjectivation. To acknowledge the more complex picture of human subjectivity and the implications for 'subjectivation' has consequences for the complexity of influences that need to be acknowledged in investigating in 'subjectivation' when assessing new emerging technologies.

In the next sections of this chapter, first the role of social influences in technical mediation and following the role of technology in human adaptation systems shall be briefly approached with the eyes of this acknowledgement. Where the posthumanist approaches to the influence of technology and technological artefacts have brought up concepts on 'technological mediation' and 'originary prostheticity', this thesis offers the adaptation of approach to human subjectivity on behalf of concepts like 'social mediation' and 'originary sociality' phrased intentionally imitative. In addition, technology shall be addressed as a factor in human adaptation systems.

I think it is important to recognize that mediated posthumanism is not attacked but complemented in this thesis. Consisting of a profound approach to investigate in the constitutive role of technological artefacts in the constitution of human life represented through postphenomenology

and the subjectivation approach, it is engrossed by the social embeddedness of human individuals in their environment. In the following section, this social embeddedness and the constitution of the human being through adaptation systems and factors shall be briefly summarized in two terms which reoccurred in this thesis: 'social mediation' and 'originary sociality'.

Social mediation and originary sociality

In the above sections, the role of human adaptation systems, the constitutive aspect of social embeddedness and the role of subjectivity have been outlined. Through Foucault's subjectivation approach, not only technological mediation has been outfitted with an angle of perspective where the human individual is able to regain agency, but the importance of adaptation systems in an individual's life have been revealed.

In the argumentative line of Foucault who revealed that in *subjectivity* human beings are the one pole in a vast network of power-relations, and postphenomenology who has outlined the importance of technological artefacts in this interplay of power-relations and the constitutive influence of technologies, in this thesis, the importance and supportive, fundamental aspect of social adaptation systems has been presented. Human individuals are dependent on these adaptation systems and need them to work well in order to persist in a world of ever changing adversities.

In labeling the human individual and its subjectivity as *originary social*, I formulate the draft approach to a social mediation approach. In recognizing the concept of human adaptation systems in a conceptual realm of technical mediation, subjectivation and a general posthumanist framework, the importance of the sociality of human individuals and the dependency on the embeddedness of the individual in a systemic network of supporting factors is formative. The way in which a human individual is equipped with supportive factors is dictating the way in which it reacts to situations. On the same argumentative line on which technical mediation argues for the mediating influence of technological artefacts where the concept of human adaptation systems is located.

The term 'socially mediated' and 'originary sociality' can be understood as summarizing terms, notions which shall comprise the above mentioned concepts of the socially mediated human individual.

In resilience studies it has become clear that human individuals cannot be understood without the social context. The individual is embedded in and constituted by its surrounding context. This comprises the influence of the cultural and societal level including habits, conformities, and political and legal agreements down to direct environmental factors such as family, friends, and school/work relations. The individual is born in a pre-existing structure. This understanding is not only acquired in resilience studies but in the foucaultian subjectivity as well. The individual is part of the societal vicinity it is embedded in. The social embeddedness is imprinting the constitution of the individual and renders it 'originary social'.

In this originary sociality, the individual is socially mediated through the influencing factors which are described above. The presence of a moderating factor evidently alters the way an individual reacts to external influences. The presence of risk factors or adversity is presented with even more importance.

As the individual is to be understood as technologically mediated because of its originary prostheticity, it needs to be understood in its aspects of originary sociality as well. This term is thus illuminated here to highlight another important aspect and to support the statement of this thesis. These terms ought to highlight that in the approach of mediated posthumanism and postphenomenology, the conceptual acknowledgment of the argument of this thesis are already set. The acknowledgment of the mediated character of the human existence and the key working-point for adaptation is human subjectivity is already accepted and discussed in technical mediation and originary sociality. In outlining the work done by resilience studies, this thesis is highlighting the conceptual tools and the insights that are missing in these approaches. It is highlighting what appears to be taken for granted: the social embeddedness of human existence. The choice to use these terms in the above described manner shall point at this missing link.

Without the acknowledgment of the social embeddedness of the human individual, investigating in the influence of technological artefacts is only half way done. In the next section, technological influence shall be addressed further and the role of technological artefacts shall be assessed.

Technology in regard of human adaptation systems

In this thesis, the role of technology in human existence is examined. Following this, the thesis has zoomed in on the most recent approach in this investigation and outlined the approach of mediated posthumanism. Here, it has become clear, that it is important to become aware of the role of technological artefacts in human subjectivity. Mediated posthumanism argued that it is undeniably important to acknowledge the individual's subjectivity in order to understand where human existence is able to maintain autonomy and agency. In methodological posthumanism, or, more specific, in postphenomenology it has become clear that, acknowledging concepts such as technological mediation and the role of technological artefacts in constituting human perception, human ontology is not understandable without technological artefacts. Following this train of thought, in this chapter, the role of technological artefacts shall be reconsidered in regard of resilience studies and the insights that have been presented in the above chapter.

In resilience studies, human constitution is portrayed in dependency of human adaptation systems wherein factors both promotive and disruptive, play a huge role. Taking into account that, as pictured in posthumanism and postphenomenology, technology and technological artefacts constitute human ontology, the development of new emerging technologies, especially technologies entailing the potential for disruption of conventional norms, cultural distribution of roles and social interactions, must be understood as an influence with potential to represent a risk factor.

Recalling the understanding of factors are risk factors possible negative influences on the individual's adaptation systems. Human adaptation systems can be understood as networks of promoting and

protective factors on all levels of human existence. Moderating and mediating factors secure the stabilizing ability of human adaptation systems, risk factors affect them negatively.

> 'In addition to direct measures of adverse experiences, we also assessed risk factors and cumulative risk indexed by well-established predictors of child problems, such as low maternal education or low socioeconomic status. These risk factors are assumed to index situations with more challenges or fewer resources or some combination of the two for the group of people who share the risk factor. Negative life experiences represent one type of risk factor, but risk is a broader concept, encompassing any kind of predictor of an undesirable outcome.' (Masten, 2011, p. 497 f.)

Framed in this way is technological influence, or rather the usage of new, unfamiliar technological artefacts necessarily considered a risk factor of varying degree. In terms of a foucaultian understanding would a new technological artefact only then *not* alienate the individual from being fully itself as long as it can fully subjectivate itself to that technological artefact in a controlled and disciplined, thus directed manner.

Subjectivation can be seen as a process and, when trained, method of human individuals to integrate technologies into the individuals existence with the aim and purpose to adjust, transform the own existence into one that is able to use the artefact to the individual's good. As the first and second wave have shown, certain factors influence the individual on a stringent level. Family for instance is highly important to recognize as a factor with the potential to moderate risk factors. Technological artefacts, especially those with a social component, inhere this very ability to act as both a moderating and an aggravating factor. Technological artefacts represent a platform that can be used as a moderating factor or an adversity aggravating factor. Dependent on the life situation of the individual, social environments may moderate or intensify negative influences. The way in which a certain technology is adopted in a person's life is dependent on the surrounding adaptational systems and the way in which the individual is using it. The way in which the individual is using it can be approached through the perspective of subjectivation theory.

'Subjectivation' can be addressed as method to increase the probability that a technology turns into a moderating factor of adversity or a stabilizing factor of the individual's life situation and resilience to change and imposition posed by technological development. After all, the focus of this thesis is the effect of new emerging biotechnologies on the human existence. Subjectivation on the other hand, is able to function as a method to turn potential risk factors into moderating factors. To quickly recall, promotive factors are influences that promote adaptive behavior. A promotive factor can be understood as assets or resources an individual can draw from in times of need. Protective factors are influences that protect the individual from suffering from negative influence.

The role of technological artefacts is thus manifold. In the moment it is presented to the individual, it can be both, a risk factor or an asset. Being subjected to the technological artefact, this double status is determined into one of these and in actively subjecting to it, the individual can turn the device into

another state. In other words, a technological artefact approaches the human/non-human relation on the basis of a Heisenberg indeterminacy principle.

These examples in quantum physics aside, technological artefacts represent a factor in the constitution of the human individual, the one way or the other. Explained through the point-of-view of postphenomenology, it constitutes human existence and is constituted by it. Through the eyes of resilience studies, it represents a risk or a moderating factor.

The notion 'technology' represents one of many human adaptation systems. It represents a multitude of factors, is embedded in a vast network of interrelated factors and can have protective and moderating effects on the human individual. If malfunctioning or the relation of the individual to that system is defective in some way, it can turn into a risk factor that may negatively affect the stability of the individual's constitution.

Chapter 3.4 – Chapter conclusion

In this very extensive chapter important aspects of this thesis have been presented. The approach of resilience studies has been introduced as an approach that investigates in the processes involved in the well-being of human individuals. This approach has been outlined as a beneficiary well of information and methods and tools for the investigation in the social constitution of a human individual. It has been outlined, that in these investigations and in the analysis drawn from resilience studies, concepts and structures could have been extracted that offer a picture of the individuals subjectivity which outlines the *originary sociality* of human existence. Human beings have been portrayed as constituted by its social embeddedness and this social embeddedness has been outlined as coercively necessary to approach the human existence. In being socially mediated, necessary factors of human subjectivity are missing when the mediating influence of social factors are understated.

In this thesis, mediated posthumanism has been outlined to be the most recent approach to acknowledge the impact of new emerging technologies on the human being. It has been outlined, that in mediated posthumanism an approach has been created that is able to grasp the complexity of the technologically mediated human existence. In this chapter, it has been outlined that for this investigation in human existence, it's most basic aspect: sociality, must not be forgotten.

In human adaptation systems, a heuristic tool has been presented that offers insights in the complex structures of the social embeddedness of human existence. Technology has been offered as another cornerstone in this tool.

It is not without problems to parallel two approaches originating in other disciplines and methodology. Nevertheless has it become clear that human subjectivity, the fundamental pillar of mediated posthumanism, is dependent on more aspects than it has been considered of yet.

Chapter 4 – Somatechnologies

Lucie Dalibert (2014) has been investigating in new emerging biotechnologies and the implications of the ongoing development of those technologies on the human being in regard of the stance of the body in recent approaches in philosophy. In her dissertation (2014) she outlines that in the current streams of philosophy of technology, the 'body' is treated as a transcendental, almost platonian form instead of being acknowledged as an integral part of human existence. Along her concept of 'somatechnologies', she outlined the importance of recognizing the body as the subject of intimate relations of technological devices with the human being. Referring to Grosz (1994) Dalibert critiques that in modern versions of philosophy of technology, especially in recent approaches to posthumanism, the body is treated with a profound somatophobia (Dalibert, 2014, p. 125). The body is turned into a 'discursive, not to say linguistic, construct(ion) or surface of inscription of social and cultural meanings (ibid, p. 126).

Her critique of recent approaches of philosophy of technology hereby approaches a resembling aspect as it is pursued in this thesis. Both her approach and this thesis argue for a better understanding of the more secular aspects of the human existence. In her thesis, the stance of the body, its corporeality and the implications that this corporeality implies are addressed. In this thesis, the sociality of human existence, its embeddedness and the implications that implies are addressed.

Arguing that biotechnologies, especially technologies with potential for human enhancement should be considered as intimate technologies, Dalibert evokes the point the importance of the body in human subjectivity. It needs to be taken more into an account as it is an important part in establishing a debate about what it means to be human in regard of technologies. She argues that the intimacy between technological artefacts and human subjectivity is conducted through the body. She evokes the posthumanist concept of 'somatechnologies' which includes the appreciation of the role of the body as part of the human existence. She outlines the heuristic potential of conceiving new emerging biotechnologies as anthropotechnologies with focus on the corporeal intertwinement and the onto-anthropological entanglement of bodies and technologies. Dalibert is investigating in current streams of philosophy of technology who are concerned with the relation between human existence and technological artefacts and technology in general. She concludes that none of these accounts the body in the rightful way. In outlining somatechnologies and pursuing a case study of bodily attached technologies, both as prostheses and implanted into the body, Dalibert shows that the role of the body is significant to fully understand human existence in regard of technological mediation.

In investigating in body-technology relations, suited in the set of philosophy of technology, posthumanism and human enhancement, Dalibert's case is analyzed from almost the same angle as the presented concept in this thesis. This chapter outlines the proximity between the line of argumentation in this thesis and the statement in Dalibert's thesis to show that although mediated posthumanism has accomplished the clarification of important issues in the understanding of the composite character of human existence, there is the need not to oversee the non-technical aspects

of human existence such as its corporeality or, as this thesis argues, its sociality. Particularly when the subject matter of the philosophical investigation is such an anthropogenic entity as technology.

As can be seen in the chapter on posthumanism, recalling the introduction to liberal and dystopic posthumanism, 'human enhancement' is a debate that is loaded with normative values. The humanistic debate about the value of technological intervention in 'human nature' revolved around arguments that are based on issues concerning the social impact of technological intervention. On a humanistic basis, liberal and dystopic posthumanists debated the desirability of technological intervention in human existence. In the above chapters it has been outlined how succeeding posthumanist approaches have focused on the *relation* between humans and non-humans. They have outlined where the conceptual approach to human/non-human relations are flawed, the social aspect of the debate of liberal and dystopic posthumanists has been lost on the way.

In Dalibert's concept of 'somatechnologies', a refined approach to the social aspect of this debate can be seen. Her thesis offers an account of another lost account, the body. She investigates in the determinative influence of technologies that exceeds normal human-technology relations and offers an account on a concept she calls 'somatechnologies'. Here, technologies with potential enhancive properties are discussed. She focusses on prosthesis and internalized medical technologies and outlined where the approach of mediated posthumanism is incomplete in addressing intimate relations with technologies. She hereby outlines where technologies exceed the conceptual impact described in mediated posthumanism and focusses on cases where technologies affect the individual's life on a very intimate level. She hereby touches an area where the social aspect, the embeddedness of technological influence on the human subjectivity can be seen.

In the following chapter, this account on the intimate and thus socially important aspect of technological influence on the subjectivity of human individuals is addressed. In order to introduce this, the background and methodology of Dalibert's thesis shall be introduced in the following section.

Chapter 4.1 – Background

To investigate in the philosophical composition of somatechnologies, Dalibert has investigated in multiple concepts that address the relation between the human body and technological artefacts. In philosophical anthropology, referring to Kapp 1877 and Gehlen 1983, technology becomes equated with human organs and vice versa. In conceptualizing technology as projections of human organs, technology becomes the externalized, in-organic and enhanced version of human organs. Perceiving artificial devices such as forklifts, clothing or telegraph-lines as abstracted, enhanced versions of human organs, the aspect of bodily representation becomes bodily substitution. The corporeal imperfectness of human abilities is compensated with technological advancements. The external devices are thus seen as an abstract form of external corporeality, part of the human ontology and crucial for the survival of both individual and species. The artificial devices get the status of bodily prostheses in a more abstract understanding. The ontological intertwinement is quite similar to the one we have encountered above in the section about transhumanist reasoning. Perceiving technology as integral part of human being perceives the human existence as a technological one. Gehlen and

Kapp remain in these liberal posthumanist restrains as they refer to technology as external to human existence and remain in perceiving technology and human ontology as influencing *each other*.

> 'The counterpoint of technology as organ projection is a functionalist, and at worst instrumentalist, view of the body: the body becomes a tool or a set of tools, it is extended by technological artefacts at the functional level, as a functional entity. […] Finally, the thesis of organ projection relies upon and reinstates a strong anthropocentrism. Technologies are orangically determined – both functionally and morphologically. […] As a matter of fact, (for Kapp and Gehlen) no shape of technologies can exist outside of the human organism.' (Dalibert, 2014, p. 130 f.)

Philosophical anthropology, especially the account of organ projection and the organological concept of technological artefacts, cannot account for the somatechnologies Dalibert is working towards.

More interesting are the concepts of the already mentioned notions of 'originary prostheticity' and 'originary technicity' by Bernard Stiegler (1998). These concepts emanates from the apprehension that humans and technology are always intertwined, human existence is intrinsically technological and technology is intrinsically human, humans and technology thus co-constitute each other. Hominization, the process of becoming human, is conducted through technological artefacts (Dalibert, 2014, p. 132). Through the 'process of exteriorization', Stiegler argues for the pursuit of life by means other than life. The origin for that is in bipedalism. With the erection of human posture and the freeing of the hands for tasks other than walking, tool-usage gained more room to deploy. Since this change in human existence, the usage of tools is described as contributing to the shape of the human body. 'While the human develops tools and technologies, technologies in return contribute to shape the human in its bodily form and existence. […] Human bodies co-evolve with technology. The ontological intertwinement of humans and technology is a highly corporeal matter.'(Dalibert, 2014, p.133).

The exteriorization of human existence in the creation of technology that in return creates the human cannot be coined to one predating the other. Both humans and technology co-constitute each other, are each other's constructs and creators. This resonates with 'technical mediation', another concept that has already been explored above (see Chapter 2). 'Consequently and fundamentally, humans and technology are not ontologically separated, but rather intertwined and co-shaping each other. Technologies hence do matter in the making, shaping, and meaning of embodied humans. Bodies are always already 'bodies in technologies', as Don Ihde […] insists.' (Dalibert, 2014, p. 134)[17]

But again, as previously, the approach is not focusing closely enough on the 'lived intimate relations between bodies and technologies' (ibid, p. 135). Dalibert continues to explore multiple accounts on human technology relations, co-constitutive concepts of humans and technological artefacts. With the notion of 'anthropotechnologies' Dalibert includes Peter Sloterdijk's 1999 notion for enhancive technologies. Sloterdijk argues that the human failed in staying animal but produced 'the human' through speech and creativity. Through new structures and devices of communication and media, the human being has entered a stage of becoming-human as a process of domesticating humans. While

[17] Referring to Don Ihde 2002

the human being has been cultivated through lecturing, reading and speech, new technological possibilities are changing the landscape of human domestication. 'With genetic technologies and the possibility to select for genetic traits […], the role of anthrotechnologies in making – taming and breeding, lection and selection – of the human is made manifest.' (Dalibert, 2014, p. 138). This notion of anthropotechnologies, Sloterdijk asks us to think about the kind of human being we want to become. The core-conclusion is that humans are not pre-existing but underlie selection and indirect breeding. With the paste of new emerging biotechnologies, this indirect breeding could become direct breeding relatively fast and biotechnologies are becoming literal anthropotechnologies.

Anthropotechnologies as presented here, thus technologies that incorporate the self-breeding of human societies in their design, display the extent to which social influence of technological mediation is embedded in social influences. Although here issues on a societal level are addressed, the role and importance of social norms, conventions, and trends can be seen. Dalibert focusses on the role of the body in this regard, nevertheless represent these investigations in somatechnologies a huge social aspect, represented through concepts such as anthropotechnologies. Technologies, as it is outlined here clearly, are embedded in social norms. Technological artefacts are socially mediated entities and are themselves mediating human existence. As acknowledged in postphenomenology in the notion of 'co-constitution of humans and non-humans' and the concept of 'composite intentionality'. Human subjectivity cannot be understood without recognizing social embeddedness.

Recalling Foucault's example of how technologies are disciplining the body to use plans (think of the pencil), anthropotechnologies are defined as somatechnologies. 'The body with/in technology being crucial in one's becoming-subject, anthropotechnologies are, as I shall address, somatechnologies.' (Dalibert, 2014, p. 143). In Dalibert's account, the concept of somatechnologies provides the anthropological intertwinement of human beings and technologies with regarding the mutual intimate relationship (ibid, p145). 'Humans do not enter into relationships with technologies qua abstract entities but as material beings – as bodies.' (ibid) Especially Foucault's concept of subjectivation, the process of subjectivation in specific historical and cultural contexts, is not independent of the body, Dalibert argues (ibid, p.141). In the context of Dalibert's thesis, the notion of 'bio-power' is defined as the governmentalisation of biological life. This is described in two aspects, disciplining techniques of the body and administration of population. Bio-politics is focusing on the species-body, the regulation of the population through disciplining the processes and the mechanisms of life.

> '(A)nthropotechnologies are always intertwined with the body and humanness (i.e. who counts as human). Bio-politics and discipline are critical in (re-) shaping them. […] Despite the value of a Foucauldian understanding of anthropotechnologies, it does not enable to apprehend the mundane intimate relations between bodies and technological artefacts […] (but) the concept of somatechnologies constitutes a posthumanist heuristic tool for apprehending the intimate relationships (can).' (Dalibert, 2014, p. 144)

Dalibert reads Foucault's notion on power, disciplining of routines and training of techniques, regulatory and governing processes as focusing on the body. Bio-power regulates on the individual

scale as it fashions the body through disciplines and routines and governs the bodies on the large scale through unification, regulations and normalization. Foucault, as I have outlined above (see chapter 2) outlined that subjectivation of the individual to power-relations indeed forms a new subject that differs from the previous. Dalibert translates these processes to the body and outlines that the body is the pivotal point that is governed, regulated and subjected. Nevertheless is the concept of somatechnologies needed to understand the intimate relations between humans and technological devices to the full extend.

At this point it becomes apparent, that the foucaultian concept of *subjectivation is indeed the pivotal point* on which the most recent approaches rest on. It is the individual's subjectivity that is appealed when the acknowledgement of the impact of technology has not been understood in its full extent yet. Postphenomenology argues, that in the individual's subjectivity the human individual is able to address the non-human *and* the relation as in the process of subjectivation the relation is actively engaged. In Dalibert's account on somatechnologies, the importance of bodies in the relation to technologies is addressed through the subjectivity of the individual towards bio-powers. Power-relations directed at the body channeled through disciplination, training and routines. The approach of this thesis outlines the importance of social power on human subjectivity. In resilience studies, this thesis has outline a concept to grasp the influence of social factors and processes on human subjectivity.

Subjectivity enables the relation. In postphenomenology, thus mediated posthumanism, in Dalibert's somatechnologies, and in the sociological mediation issue of this thesis; in each of these three approaches, the human subjectivity is addressed to outline the conditions on which the mediation of technological artefacts take place. It is not merely technological artefacts that constitute human existence; human ontology is a composite existence based on many important, influencing factors. In the approaches presented in this thesis, it is the 'subjectivity' itself and the individual's ability to engage in this subjectivity, it is the role of the body in this relation and it is the social context in which that technological mediation takes place. Nevertheless, human existence is mediated and embedded in many ways, and mediated posthumanism is a huge step in the direction where this can be understood fruitfully.

Refering to Susanne Lettow (2011), Dalibert outlines somatechnologies as anthropotechnologies which rise from human enhancement technologies. These technologies are intentionally geared to alter the human body. Dalibert intends to emphasize that humans do not enter human technology relations as transcendental beings but as corporeal, material things – as bodies. Somatechnologies as a posthumanist concept shall include an 'account for the materiality and agency of bodies and technologies in practice' (ibid., p. 145) as well as the role somatechnologies play in (re-) making humanness. This concept includes the above mentioned onto-anthropological intertwinement of humans and technologies as a corporeal entanglement: originary somatechnicity. Neither technologies nor bodies are outside power-relations. The concept of somatechnicity outlines the corporeality of

humans in the foucaultian understanding of a subjectivation approach: 'bodily being in the world involves a somatechnic event.'[18]

The body has been reduced to biological aspects, to its materiality, has been set in context with technology through organ projections and more profound as originary prostheticity. But even though the onto-anthropological intertwinedness of body and technology that becomes apparent in originary prostheticity, the conceptualization has remained on a general, more abstract level. Dalibert has argued in her thesis that the body is not only important but at stake in addressing the remaking of humanness, thus the approach to subjectivation to new emerging technologies, and the implied concept of a conscious re-invention of the body. 'Somatechnologies are technologies that are situated in intimate relations with bodies; somatechnologies are intimate technologies.' (ibid, p. 148) Dalibert has outlined, that the concept of somatechnologies addresses these so far hardly acknowledged issues in the approach of posthumanism and to address these issues, 'somatechnologies must therefore be explored.' (ibid, p. 149)

Chapter 4.2 – Somatechnologies

This section is exploring Dalibert's investigation in 'somatechnologies' and the implications for mediated posthumanism. It will become clear that this exemplary approach to Dalibert's concept of somatechnologies represents both the applicability of mediated posthumanism and the realm for improvement it inheres.

To approach the concept of somatechnologies, Dalibert approaches two kinds of technologies: prostheses and implanted technologies. In order to limit the scope, the focus is set on implanted technologies in the context of this thesis. On both kinds of technologies, Dalibert has conducted fieldwork and questioned patients in regard of their bodies and the technologies. I shall outline this fieldwork in this section and focus on the social surrounding, the interaction between the patient and their mediating and moderating factors such as family, friends, and institutions.

Accompanying the medical doctor Cecile De Vos (see de Vos 2013) from February till June 2012, Dalibert interviewed fifteen patients in close proximity to their implantation procedure. Interesting to note at this point is an observation by Dalibert: In participating in the sessions between doctor and patient, the additional audience (Dalibert and a translating colleague) in the role of questioners seemed to have built a feeling of power-imbalance (Dalibert, 2014, p. 155). This imbalance between the patient and the medical authority and their accompanying questioners was sometimes a bit eased by present spouses and other family members next to the fact that neither Dalibert nor her colleague where recognized as medical authorities. Nevertheless, this little example of a setup between 4-7 people can already show that family members can function as moderating factors in a stressful situation.

[18] Stryker and Sullivan (2009:61)

As described by Dalibert on pages 168-170, the spinal cord stimulation device is an invasive technology, intended to reduce pain through the stimulation of specific areas of the brain mediated through the spinal cord. The device is attached to the spinal cord via an electrode which is controlled via a small device, the pulse generator, implanted in the lower abdomen or upper buttock. After successfully implanting the device, the internal device is controlled by an external device to engage various programs to be able to adjust the functionality of the device to the activity. The patient has no full control over the functionality of the device, though. It is mandatory to consult the medical staff for extended adjustments of the pulse-frequency. The electrode administers continuously, weak pulses to the dorsal columns of the spinal cord. The procedure aims at fighting symptoms of chronic pain patients with the effect, that through the administering of the small irritation of the nerves, the chronic pain sensation is at best eliminated but mostly reduced to a bearable level. The overall effect of the device is supposed to reduce the negative influences of chronic pain on normal life: 'one's physical abilities, sleep, social life, mental health and wellbeing (Dalibert, p. 168).

The devices, both internally and externally, show altering effects on people's behavior. The internal device vanishes to the invisible realm the interaction with the device is drawn to the external remote control. Actively used or not, the twofold device is altering the behavior of patients drastically. The usage of the device is highly scripted. As the reader recalls, Foucault asks the user of a technological artefact to subjectivate our existence to the routines implied in a device through disciplining to that artefact. Only in mastering it, one can fully integrate the artefact in one's existence. The example discussed here, as deliberately chosen by Dalibert, shows us, that in this case this is not only a figurative expression but includes an actual embodiment aspect through the implanted pulse-generator. As said above, the implantation of the actual device and the subjectivation to the use plan make it up to the full embodiment.

There is a limiting problem to this full embodiment, though. The device itself needs a certain form of maintenance that cannot be performed by the user/patient. Commonly used devices need to be replaced every few years due to the battery life, more modern versions are able to be charged wirelessly, though. But the most interesting aspect is the limitation of the range and frequency of the pulse-emitter. These settings, although changeable, are determined by the medical staff. The staff is hereby an external entity, allowed to infiltrate this intimate relationship between patient and device as they limit the possibilities in this relation. The presence of the device in one's body that needs external maintenance and adjustment alters the relation the individual is able to gain with its own body and embodied piece of technology.

To refer to Don Ihde and Peter-Paul Verbeek in regard of people's perception (see Chapter 2) the device and the patient share a composite intentionality. When the device is supposed to work up to its full potential, patient and device need to merge as above described. The concept of technical mediation suggests that the usage of the device leads to a hybrid intentionality. The way the patient is able to be present in the world is changed entirely through the reduction of pain (staying with the spinal cord implant example). The intentionality of the patient is hereby changed through the

intentionality of the technological device and both patient and device are forming an entirely new hermeneutic entity with a hybrid, cyborg intentionality. (Dalibert, 2014, p. 179 f.)

To put it in another context, the artifact, either the prosthesis or the case pursued in this section, the spinal cord implant, are supposed to be integrated in the life of the patient to change a deprived situation for the better. Dalibert shows that this is not only dependent on the design of the artifact, but dependent on the interaction of the patient with it. It needs to be fully embodied by the patient so s/he can have a working relation with the device. Although this critique is a valid observation and serves to confirm the need for a close attachment to the individual's stance in the realm of subjectivation, it is also able to show a need for the acknowledgment of a social context in which this embodiment takes place. Looking through the glasses of human adaptation systems, important factors in this relation between the patient and its embodied, medical device can be revealed. I shall explain this approach briefly in this section and hint at points where the social interaction and support groups become apparent in this example.

Dalibert presents her case along the line of the purpose of the device. In the case of the spinal cord implant (SCI) and the associated control device, the general aim is to reduce pain that is not otherwise treatable to such an extent that the device itself turns invisible. As patients are treated for symptoms such as pain in the case of SCI, the disappearance of pain shall enable a situational normal, healthy life. Dalibert refers to Drew Leder (1990) who argues that 'in pain the body 'dys-appears.' […] Dys-appearance characterizes the body's absent absence. That is, the body is no longer experienced as transparent, […] but is rather brought back into the foreground of our awareness.' (Dalibert, 2014, p. 197) The aim of the SCI is thus focusing on making the body dys-appear again and stay outside of appearance itself.

That this principle is able to be effective, there is a need for the absence of other possibly problematic issues. The device might be working fully to its purpose and reduce the pain to an extent where the body in itself is able to reappear, there may be other issues that step forward with this process as well, tough. In two examples Dalibert examined in her approach this will become more clearly in the next paragraphs.

In the context of this, it is interesting to recall the human-world-relations as conceptualized in technical mediation and postphenomenology. The postphenomenological approach as suggested by Don Ihde is built around the concept of technological artefacts having mediating effect on the way humans perceive their reality. In this mediating effect, different relations are endorsed by technological artefacts. In this context I like to recall embodiment relations. Here, the technological artefact is lost out of sight, disappeared, in the act of using it and the relation to the reality for the subject felt *through* the device. In the example of SCI, reality is experienced as lesser pain-full and more direct through the re-engaged 'dys-appearance' of the body (ibid, p. 194). It is arguably that the SCI can be understood as a background-relation as well. In normal life-situations, the disappearance of pain and the thus re-

appeared normality of being present in the world would count as a background-relation[19]. Nevertheless, as being used to adjust an inner imbalance in pain, thus adjust the way the mediation is happening, the device can perform as an embodiment relation to one's own body.

As mentioned above, an SCI would be the last step in pain-treatment. Dalibert outlines the example of Mr. Koopman who was treated with strong pain killers. The chemical medication made him distant and mellow with negative effects on his family and friends. Through their feedback on his absent appearance, he decided to cut of the chemical medication. Since the SCI was performed, the pain was released and the negative side-effects of the drugs where avoided as well. (ibid, p.199)

The role of the social context is striking in this example. Without the feedback of his family and friends, Mr. Koopman may would have not thought of changing the way his pain is treated. But with the aim to overcome the impairment that comes with pain medication, the technology was considered in the first place. The human adaptation systems family and peer systems, as well as attachment relationships with parents, friends, and others[20] are in this case highly supportive to the usage of the technological device.

The device appears nevertheless with the above mentioned use plans and patient-specific usage. One patient used to stimulate the devices responses by altering her position and bodily movement. Through certain movements or positions, she is able to trigger a certain response. The patient's intentionality to cautiously reduce pain in her feet and the technological intentionality expressed through the organized movements, the patient elaborated, a composite intentionality arose with associated gestures and movements. 'As it (re-) configures her kinaesthetic awareness, the neuromodulation technology redefines her body. Movements are central. Or, more precisely, movements are pivotal' (ibid, p. 201).

The effects of SCI does not only affect the body through organizing movement and altering perception and presence-in-the-world but has a vast effect on the social environment as well. Dalibert showed that '(i)ncorporating somatechnologies entangles intercorporeality' (Dalibert, 2014, p. 207). Especially family and friends, persons with a close contact to the patient, are affected by the incorporation of the device in the patient. The altered agility, perception and simply being of the patient is changed deeply how the environment is able to respond to the patient and *vice versa*.

Next to the positive example about Mr. Koopman who was able to make full use of the purpose of the SCI device but was also able to regain some impaired adaptation systems, there is a negative example as well. Mrs. Bloemen's device, although successfully implanted and fulling the purpose, caused problems in her inner circle of supportive systems. Mrs. Bloemen considered the device a great help

[19] A good example for this can be found in Dalibert, p- 202: ,Mr Koopman recalls that the neuromodulation technology *becomes a part of your life very quickly [..] It's just that the tingling feeling [..] if that is gone [..] the last fourteen days I did not have the tingling sensation and one does get used to that again as well [..] But the first few days it's like going outside without a coat – like you miss a part of your body (interview with Mr Koopman, April 12th, 2012).'* (Dalibert, 2014, p. 202, emphasis in original)

[20] See Appendix b

to her everyday life, but was driven to hide it (the bulged skin where the device was implanted) under clothes as she was embarrassed of it.

In the course of the questioning, two issue where revealed. On the one hand, she seemed to have a tensed relation to her son who had the same disease (diabetes) as she had but was in the need of an insulin-pump, an implanted device to regulate the insulin-level. Here own diabetes was cured through the transplantation of both pancreas and liver. The disposition between here past illness and the current, ongoing illness of her son may be the origin of the shameful feeling she had towards the device (Dalibert, 2014, p. 214ff.). Next to this family system conflict, another problematic area appeared that is not that easy to describe in adaptation systems.

An additional factor of her unease towards the device can be seen in her role as a woman and the cultural implications that come with that. In here, the cultural dependency of the woman's self-awareness on her role as a woman is deprived. Dalibert argues that the repulsion of the woman to accept the device as part of her own being is due to this female role she sees deprived (ibid, p. 216).

> '(H)er distress over the possibility for others to see the implanted pulse generator (which informs her inability to incorporate the neuromodulation technology) cannot be understood without considering how for her being human is intrinsically linked to (white heteronormative) femininity. […] (H)er ambiguous yet intimate relation with spinal cord stimulation threatens her humanness. […] The implanted neuromodulation technology obstructs and disrupts the enactment and re-enactment of gender norms (in her case femininity)' (Dalibert, 2014, p. 219).

Here, not only direct relations but social norms, interpersonal norms and role-models are effected by the technological device. The device threatening her previous self-perception is negatively affecting her own relation with the device and thus with her 'self' as the device has become a part of her.

Another example shows a contrary outcome. An elderly woman, grandmother of many grandchildren has to hide her external control device so the kids would not play with it. Only the thirteen year old grandson who participated in the implantation process (the others were too young to be aware of what is happening) was fairly positive about the device. The recognition and positive reinforcement of the family reassures the grandmother's acceptance and embodiment of the device. For the grandchildren, after interestingly investigating in the device and the implantation-area, the device became a part of the grandmother, a part of the way it is (Dalibert, 2014, p. 213).

These examples show that not only accepting it oneself and dealing with the embodiment and subjectivation issue is important in the role of a technology in an individual's life but being reinforced by and being able to get feedback from the social surrounding is important, if not mandatory to be able to embody a device and have a healthy subjectivation process. The example of Mrs. Bloemen showed the impact of cultural role-models and social relations towards the relation the individual is able to agree to with the device. In the example of Mr. Koopman, the role of a technological device is able to overtop the purpose of a device in a positive way.

It becomes clear, then, that any treatment whether it is a prosthesis or an implant, is only then completely successful when not only the functional aspects are given, thus the purpose is met (good response, no severe side-effects, no auto-immune reaction and so on) but when the patient was able to include the technological device successfully in it's personal life, associate the device with its body and is able to enable support groups in the social environment.

Chapter 4.3 – Chapter conclusion

In this chapter two main issues where pursued. On the one hand served Dalibert's thesis as an additional exemplary critique of mediated posthumanism that applies through a similar angle of critique. In this chapter, another advocate for the acknowledgment of the *human* stance in the human/non-human entanglement can be seen. The approach to the concept of subjectivation as the savior of human individual self-determination and agency is hereby not attacked but broadened in its realm of ramification. On the other hand, the elaboration on Dalibert's critique has served as a scaffold to show the importance and intertwinedness of the acknowledgment of the social embeddedness of technological mediation.

It has become clear that the approach to single the individual's subjectivity out and use it to explain the ability of the individual to regain a certain perception of freedom in a technologically mediated world, more questions rise. Dalibert has pursued the question for the role of the body in this new found human-technology intentionality and outlined that the body is an understated, often overseen pivotal point in power-relations and human technology interaction. She argued that the aim of technical mediations is conducted through the body. The body is hereby outlined as an important aspect in mediated posthumanism that needs to be acknowledged in its importance.

This can be seen in the concept of anthropotechnologies. Here Foucault's concept of power-relations is addressed to outline that the body is the substance on which social breeding tendencies are issued. Sloterdijk's provocative argument that bio-technologies ultimately lead to new breeding patterns in the society where biological selection does not apply any more is crass but shows the power, technological artefacts, especially those with possibly enhancive implications entail on a social level. It becomes clear that discussions around terminology of 'enhancement' such as provided by Coenen may be a helpful tool.

Through outlining the intimacy somatechnologies have, Dalibert's case study outlines an important aspect. As presented in the resilience studies chapter are human adaptation systems complex structures of multiple factors that support the human individual in its ability to withstand adversities. In this chapter, the concept of bio-powers and the vulnerability outlined in the intimacy of somatechnologies, the importance to recognize the functionality of these human adaptation systems is highly important. In other words, it is important to acknowledge the social mediation in the individual's subjectivity in order to fully grasp the potential impact of technological mediation on the human individual. Without recognizing social mediation, the consequences of technical mediation cannot be fully understood.

In the chapter on subjectivation it has become clear how important it is to be aware of the constituting power-relation. Only in consciously subjectivating to power-relations and using them to transform the own existence, the individual is able to attain freedom. In this chapter, two more areas of influencing power-relations have been shown that influence individual subjectivity.

In this chapter it has become apparent that the relation between technologies and human individuals has a more corporeal aspect than the way in which it is discussed in mediated posthumanism. Dalibert has outline the importance of a concept such as somatechnologies to address the corporeality of subjectivity in a technologically mediated existence. In this argument of a corporeality, in outlining the issue of human enhancement technologies and the issue of bio-power, another layer becomes apparent. Human subjectivity is technologically mediated, but it is embedded in a social context, it is loaded with social influences, affecting the intimacy of our body, the corporeality in a social context and social norms.

The approach of mediated posthumanism can provide a solid and refined approach to investigate in the constitutive role of technological artefacts in human subjectivity. Other levels of investigation such as investigating in the corporeality of subjectivity and the social embeddedness of subjectivity are shown to be important to fully understand this subjectivity, though.

In this chapter, it has become clear that integrating the acknowledgement of social embeddedness, thus the influence of promotive and protective factors and human adaptation systems is mandatory to understand technological influence on human subjectivity.

Chapter 5 – Discussion

This thesis is based on the postphenomenological concept of a technologically mediated human individual. This concept is the core element of mediated posthumanism and describes human existence as mediated by technological artefacts. This concept in recent philosophy of technology is mainly based on the philosophical stance of postphenomenology as presented by Peter-Paul Verbeek (2005, 2011), thus framed around *originary prostheticity* by Stiegler (1998) and technical mediation by Latour (1994) as well as a reinterpretation of Foucault's stance on 'subjectivation' by Steven Dorrestijn (2012c) and Verbeek (2011). It is the foremost actual concept to address issues concerning new emerging (bio-)technologies, their implications for human existence, and human ontology and includes ethical and moral concerns. This thesis has outlined the most crucial concepts in this matter, has outlined where the approach of mediated posthumanism comes from, where it differentiates from the former approaches and why it is important to recognize technological development in the presented manner.

Next to this affiliation avowal to mediated posthumanism, I have argued, that resilience studies, especially their concept of human adaptation systems, are able to add another layer to the recognition of the technologically mediated human existence. I have argued that especially in the subjectivation approach based on Foucault which is pursued by Dorrestijn, but also by Verbeek, Sharon and Dalibert, the concept of resilient, well-functioning and enduring human adaptation systems as a precondition for subjectivation, can offer important insights. I have outlined Dalibert's approach to a more corporeal understanding of human corporeality and the importance of the role of the human body in the approach to technical mediation and subjectivation. She outlined, that the effect of technologies shall be considered in an acknowledgement of the body. With this critique, Dalibert offered a perspective on the development of posthumanism and postphenomenology that comes close to the critique this thesis pursues: the role of social factors, the embeddedness of the individual in a social environment is understated in mediated posthumanism and could be informed by resilience studies in this regard. In fact, the relying of mediated posthumanism on the subjectivation approach is indeed in the need for the acknowledgement of the individual's social embeddedness as here the capability of the individual to be able to actively engage in subjectivation can be questioned and revealed.

As the already quoted statement by Verbeek is able to summarize:

> 'Human existence does not take place in a vacuum but in a world made of ideas, artifacts, institutions, organizations that all have impacts on human subjectivity. […] Technology can be seen as one of these sources of power that help to shape the subject.' (Verbeek, 2011, p. 68)

In the course of mediated posthumanism, human individuals have been shown to be originary technological beings and their intentionality and agency in this world are mediated by technological artefacts. In regard of the research performed by resilience studies, it has become clear that they do not exist in a world primarily influenced by *technologies* but in a world constituted by other human beings, societal, and cultural context as well. As Foucault already outlined, human beings are

constituted by power-relations in which they are embedded. The human individual is defined through its subjectivity towards these power-relations. The novelty acknowledgment of the vast influence of technological artefacts in this subjectivity has been introduced in postphenomenology. Here, not only the influence but the constitutive role of technological artefacts have been outlined. This thesis has shown that in this new acknowledgement of technological mediated subjectivity, some factors and aspects are missing: the social embeddedness.

In this thesis, the social environment is understood as the constituting influences on the human individual. Especially family and friends as the most direct influences but also more general influences such as society, culture and on a median level schools, work- and living environment are constitutive to the human individual. In this regard, the psychological approach of resilience studies has been introduced.

In the acknowledgment of the sociality of subjectivity it has become apparent that human subjectivity, especially as the pillar of the subjectivation approach of mediated posthumanism, is dependent on the introduction of social factors in the approach. Human individual subjectivity is constituted by technological artefacts *in a social environment*. This environment needs to be integrated in the approach to human existence mediated by technological artefacts.

The advocated approach in mediated posthumanism: subjectivation, is especially dependent on the acknowledgment of socially mediation. In introducing the supportive and moderating effects of human adaptation systems in the approach to *subjectivation*, the investigation in influences of technological artefacts are sharpened due to the additional perspective.

Why resilience studies?

The perspective on human adaptation system is key in the question for the need for the introduction of resilience studies in this thesis. The introduction of the approach of 'resilience studies' is the core-element of this thesis. It is not without complicacy in the context of posthumanism, though. I am sure that there are other perspectives such as those from sociology, anthropology or other disciplines with a focus on the social character of the individual that enable similar insightful approaches to the human social embeddedness.

In this thesis, resilience studies are approached and introduced to posthumanism because of the empirical background, the perspective of the human individual as vulnerable to the constitutive influence of the social environment, and foremost, because of the high resemblance to postphenomenological reasoning concerning the individual's subjectivity. Resilience studies offer an insight in the social conditioning of the human individual that offers beneficiary angles of perceiving the influences of environmental influences.

As outlined, the resurrection of human self-determination in mediated posthumanism is based on the account of subjectivity. This subjectivity of the individual towards the non-human can be resembled from postphenomenology to resilience studies.

In resilience studies, some tricks and tweaks needed to be applied, but in the revealed core-concept the human individual is portrayed in its subjectivity towards a wide variety of factors and influences. Complied in the short list of factors (appendix a) and more systemically captured in the list of interrelated adaptation systems (appendix b), the fruits of decades of empirical research in the constitution of the human individual's dependence on social factors is drawn.

Next to that, and with some help from Foucault's subjectivation approach, the insights of resilience studies are further able to show that the individual is indeed constituted by this difficile network of factors. As part of the embeddedness of the individual as argued by Foucault, the outlined list of factors play differently weighted roles in the constitution of the individual's ability to withstand challenging influences, risks and adversities. Acknowledging the role of technological artefacts in human life, the concept of originary prostheticity and the inferential approach of technical mediation, this concepts can be embraced to be a universal concept.

This thesis represents a starting point in investigating in the social dependence of the technologically mediated subject when it comes to the concept of subjectivity and subjectivation. In future investigations, an approach recruited by science and technology studies would be additionally suitable to address the complex relations between the field of philosophy and psychology. It would be mandatory to conduct field-work through questionnaires and a specific case studies to reveal the potential of human adaptation systems through the lens of a technologically mediated subject.

In regard of the growing pace of technological development and the growing influence of the produced technological artefacts on the everyday life and constitution of the human being, the concept of resilience can be translated in a concept of stability of the individual's ability to cope with the demands of an ever-growing human-technology hybridity.

Methodologies

The influence of technological artefacts on human existence may not have been more or less acute in the past centuries, in western societies, the ubiquity and obtrusiveness have increased in everyday lives, though. Combining the acknowledgment of technological mediation and the increasing role of digital media and technological artefacts in everyday life, investigating in the role of technological artefacts in human constitution has increased in momentum. Philosophical investigations in this regard have earned a pressing value due to a need for thorough thought on this manner. Ethical implications, especially seen in the case by Lucie Dalibert, are highly important as new emerging *bio*technologies offer new forms of technological intervention in human existence.

The approach of mediated posthumanism is thus contested sharply for possibly missing aspects. Steven Dorrestijn and Peter-Paul Verbeek laid the foundation for a new approach to human self-determination and a new role for technological artefacts. Acknowledging the own self in its relations to constituting powers and using these power relations for self-transformation presents an individual, self-determined method to regain and obtain self-determination.

Nevertheless, the approach is conceptual, elitist and lacking constraining aspects. Lucie Dalibert has shown that the body, a very individual aspect of human existence tended to be understated or even overseen. She has outlined that the body is a highly important factor in the realization of subjectivation in regard of technological artefacts. In this critique, refinement of the approach of mediated posthumanism can be seen. The investigation in the role of the body offers another dimension, another layer that needs to be included in the conceptualization of human subjectivity.

The vicinity of human subjectivity is not yet fully covered, though. This thesis has outlined that the human individual and its subjectivity is seated in a realm of social relations. The approach by Foucault is pressed ahead and the realm of acknowledged powers which constitute human subjectivity is broadened by the complexity of human sociality. It has been shown that human existence originates in a social context, evolves in constant co-constitution with that context and hence cannot be understood without it. It has been shown that resilience studies offer conceptual tools to investigate in these relations and cornerstones to include technology in this picture.

Most prominent in this thesis is the approach by Dorrestijn and Verbeek to Foucault's subjectivation approach and the integration of the engagement in the process of subjectivation to human ontology. Dorrestijn offered his four modes of interaction to investigate further in the role of a certain technology in postphenomenological accounts of technical mediation and human-world relations. In Dalibert's concept of somatechnologies, she offered the account of 'somatechnologies' as a concept of technologies with a broader effect on human corporeality than 'normal' technologies. In this thesis, I have offered the concept of human adaptation systems to investigate in the stability of the hybrid individual to better understand the role of the 'ethical substance' in regard of the 'modes of subjection'. The concept of human adaptation systems as I have presented it in this thesis shall enable the investigator in a certain human-technology relation to understand the interconnectivity between constituting social factors. This perspective shall enable the investigating researcher to better be able to understand the impact of new emerging biotechnologies on the human individual and its social context.

Socially embedded technologies

As already discussed in chapter 3 on resilience studies and the role of technology, in this sub chapter the approach to the social character of technological artefacts shall be outlined. In this regard, this thesis has offered three important angles of delineation of the role of technology in human existence. In postphenomenology, technological artefacts have been characterized as a part of human existence. Here, the hybrid character of both human and non-human aspects in human existence have been circumstantially outlined. Human existence has been characterized as being originary prosthetic, as being perennially mediated by technologies. In subjectivation, this account has been conceptualized in power-relations. Human existence has been delineated in its subjectivated character and technological artefacts have been pictured as a power that subjects the human being. Technological artefacts have become entities to which the human individual must embrace an intimate relation and fully subject itself in order to be able to use these power-relations to its own good. In resilience studies,

on the other hand, technological artefacts have been pictured as part of human adaptation systems, not much unlike the foucaultian picture of power-relations. In human adaptation systems, however, another aim is in focus. Resilience studies are interested in the fruitful development of the human individual in regard of its social context. Although present in the foucaultian approach, this more practical stance of subjectivation and resilience dependency has not been outlined in mediated posthumanism yet.

It is thus my attempt to approach human existence on behalf of each approach in a comprised picture. Mediated posthumanism has been very fruitful to acknowledge the role of technological artefacts in human existence without falling for an essentialism, a humanist, or a technocratic aptitude. In mediated posthumanism, a balanced approach comprises the acknowledgment of the constituting aspect of technological artefacts and the interwovenness of human and technological intentionality on the one hand, and the ability to self-transformation, self-determination, and in subjectivity on the other hand. Mediated posthumanism acknowledges the individuality of human existence and introduces originary technicity to this picture. In this, methodologies to approach the influence of certain technologies have been outlined in order to turn this philosophical acknowledgement of human technicity into an approach that is able to inform other disciplines such as governance, technical design and so on.

Nevertheless, important aspects are missing. The role of the human body, and the embeddedness of the individual in a social environment have been understated. In this thesis, technological mediation has been enriched with a hint to Dalibert's somatechnologies and with resilience studies' human adaptation systems. Each of these methodologies offer insights in the character of human subjectivity and refine the picture of the technologically mediated human individual.

In order to take a closer look at the common feature of all three approaches: subjectivity, in the following section, methodological aspects of socially and technologically mediated subjectivity shall be portrayed.

Especially Steven Dorrestijn's tool to evaluate technological influence on subjectivation is interesting in this regard as it is specially designed to investigate in factoids and concepts of other disciplines through the lens of technical mediation. This method applied on subjectivation theory generated the already presented list of four modes of interaction:

- 'Above-the-head (abstract): Generalizing claims about technology and humans.
- Before-the-eye: (cognitive): Cues to the mind that can change decision making.
- To-the-hand (physical): Changing gestures through bodily contact.
- Behind-the-back (environment): Influences on humans without direct contact.' (Dorrestijn, 2012, p. 64)

This concept offers a methodology to assess the mediating effect of a technological artefact. In the light of this thesis, this method could not only be applied in the approach of resilience studies to investigate in the role of technology as an adaptation system or factor, but could as well be enriched by another mode of interaction. Whereas 'behind the back' is focusing on environmental aspects such

as culture, ecological environment, climate, and similar aspects, a 'socially-contextualized' (sociality) mode which focusses on the effect on adaptation systems and the relations between systems and factors could be instated. Here, the effect of a technological artefact on the importance of a promotive or protective factor can be assessed, the influence of an adaptation system can be analyzed closer and the responsiveness of inner capacities of the individual in regard of that technological artefact can be assessed.

Vice versa, human adaptation systems can be introduced as a mediating system on its own. It has become apparent, that resilience studies outline the effect of adaptation system to even out negative influences. In the rather theoretical approaches of philosophy of technology, this empirical feedback loop of investigation can be used to test the hypothesis of a concept such as mediated posthumanism.

I think it would be very beneficial to test a combined investigation in both, the approach to 'subjectivation' and the coherent methodology of active engagement in the power-relation in focus and the investigation in the availability and responsiveness of human adaptation systems.

Own remarks

It appears, that the concept that is presented in this thesis is in need of further investigation in already existing theories available in psychology, sociology and anthropology backed up with science and technology studies' methodology to reinforce the thesis that is presented here. This refined version would further need extensive empirical testing with questionnaires and case studies. For the scope of this thesis, this was not possible.

It was my attempt, though, to outline a weak spot in mediated posthumanism. A missing precondition and link to the way in which human subjectivity is constituted and consequentially how it is assessed and approached.

Conclusion

In addressing the influence of new emerging technologies on human existence, mediated posthumanism has been presented as the most fruitful approach. Here human subjectivity is the pivotal point that enables to re-assure self-determination through the concept of subjectivation in the light of technical mediation theory. This thesis has outlined that it is not sufficient to conceptualize the technologically mediated human individual but that it is mandatory to include the social embeddedness of human subjectivity in this concept. To account for this aspect of human subjectivity, resilience studies have been presented. Here the concept of 'human adaptation systems' has been outlined that offers a methodological approach to account for the social embeddedness of the technologically mediated human individual.

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independence from the protection of their caregivers can also contribute to their trauma exposure. Adolescents are also vulnerable to a different type of loss or betrayal, such as loss or devastation concerning friends, faith, schools, and governments. They understand what these losses mean for their future, a realization well beyond the understanding of young children.

The "Short List" of Resilience Correlates

The first wave of research on resilience included both person-focused and variable-focused approaches. Person-focused approaches identified resilient individuals in an effort to determine how they differed from other individuals facing similar adversities or risks who were not faring as well. Variable-focused approaches, in contrast, examined the linkages among characteristics of individuals and their environments that contributed to good outcome when risk or adversity was high. This method focused on variables that cut across large, heterogeneous samples, and drew heavily on multivariate statistics. Across many studies from each of these perspectives and across widely divergent methodologies, the first wave of research revealed a striking degree of consistency in findings, implicating a common set of broad correlates of better adaptation among children at risk for diverse reasons. This consistency was noted early by Garmezy (1985), and has been corroborated repeatedly over the years. Masten (2001, 2007) has referred to these correlates as "the short list" (see Table 2.2) and argued that they may reflect the fundamental adaptive systems supporting human development. As investigators began to consider the *processes* that might account for why these correlates are repeatedly found, the second wave of resilience work began. While the first wave produced many ideas, constructs, methods, and findings about correlates of resilience (as well as many controversies), it was soon evident that more sophisticated models were needed to consider the complex processes that were implicated by the initial findings (see Glantz & Johnson, 1999).

Table 2.2 Examples of promotive and protective factors

Child characteristics
Social and adaptable temperament in infancy
Good cognitive abilities, problem solving skills, and executive functions
Ability to form and maintain positive peer relationships
Effective emotional and behavioral regulation strategies
Positive view of self (self-confidence, high self-esteem, self-efficacy)
Positive outlook on life (hopefulness)
Faith and a sense of meaning in life
Characteristics valued by society and self (talents, sense of humor, attractiveness to others)
Family characteristics
Stable and supportive home environment
Harmonious interparental relationship
Close relationship to sensitive and responsive caregiver
Authoritative parenting style (high on warmth, structure/monitoring, and expectations)
Positive sibling relationships
Supportive connections with extended family members
Parents involved in child's education
Parents have individual qualities listed above as protective for child
Socioeconomic advantages
Postsecondary education of parent
Faith and religious affiliations
Community characteristics
High neighborhood quality
Safe neighborhood
Low level of community violence
Affordable housing
Access to recreational centers
Clean air and water
Effective schools
Well-trained and well-compensated teachers
After-school programs
School recreation resources (e.g., sports, music, art)
Employment opportunities for parents and teens
Good public health care
Access to emergency services (police, fire, medical)
Connections to caring adult mentors and prosocial peers
Cultural or societal characteristics
Protective child policies (child labor, child health, and welfare)
Value and resources directed at education
Prevention of and protection from oppression or political violence
Low acceptance of physical violence

Table 1. *"Hot spots" for multilevel integration: Adaptive systems implicated in resilience research*

Health and stress systems
Allostasis, normal immune and HPA function
Information processing and problem-solving systems
Normal cognitive development, IQ
Attachment relationships with parents, friends, and others
Secure attachment, connections to competent and caring adults, mentors, social support
Self-regulation, self-direction, response inhibition systems
Agreeable personality/temperament traits, conscientiousness, lower neuroticism or stress reactivity, effortful control of attention and impulses, executive functioning
Mastery and reward systems
Positive outlook on life, achievement motivation, self-efficacy
Spiritual/religious systems of belief, practice, and support
Believes life has meaning, attachment to spiritual figures, prayer or meditation, religious community support, religious rituals
Family systems
Close relationships with parents, authoritative parenting style, parental support of education, parental supervision, soothing rituals and routines
Peer systems
Friendships and romantic attachments with prosocial, well-regulated peers, positive peer networks
Schools
Opportunities for learning, mastery, and relationships with prosocial adults and peers
Authoritative school and teacher styles, positive school climate, bonding to school
Larger community and cultural systems
Opportunities for mastery and relationships with positive adults and peers, neighborhood collective efficacy, cultural rituals and routines, bonding to organizations with prosocial values and positive role models

Note: Examples of widely reported protective factors on the "short list" are listed below each implicated system.

This list generally suggests that resilience has a great deal to do with what might be termed "regulatory capital," including self-regulation capacities and regulatory capacities built into social and cultural systems (Masten & Coatsworth, 1998; Masten, 2004). The role of arousal modulation systems, reward systems, and rituals is noteworthy across levels of analysis. Religious systems, for example, engage fundamental human adaptive systems in multiple ways, from teaching self-regulation through prayer or meditation, proscribing rules for living and rituals for major life passages, to fostering emotional security through attachment relationships with spiritual figures (Crawford, Wright, & Masten, 2006).

Intervention Research Designed to Promote Resilience and Test Resilience Theory

Resilience research always had a pragmatic mission: to learn better ways of preventing psychopathology and promoting healthy development among children at risk for problems. The combined influences of the prevention science movement and resilience science over the past three decades has revolutionized the models for intervention, bringing positive development and strength-based models into much greater prominence (Cicchetti et al., 2000; Luthar & Cicchetti, 2000; Masten & Coatsworth, 1998; Masten & Gewirtz, 2006; Weissberg et al., 2003). At the same time, resilience scientists recognized the advantages of intervention designs for establishing causal plausibility of their theories. It is not feasible or ethical to randomly assign children to traumatic experiences or to good and poor homes, but it is often feasible and ethical to design randomized trials of preventive interventions based on resilience models. Moreover, as noted previously, many in society are not willing to stand by waiting for a full explication of naturally occurring resilience from science before intervening to help children who are suffering or drifting toward developmental disaster.

As a result, resilience science increasingly comprises intervention studies that are based on resilience frameworks (Masten, 2006; Masten, 2007a; Masten et al., 2006), aiming to help young people and test resilience theories simultaneously. As the interest in multiple levels of analysis grows, preventive interventions are increasingly designing and testing effects at multiple levels, often focusing on the same hot spots of integrative adaptive systems discussed previously, such as self-regulation measured in