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Dramatizing Human Enhancement: How to Turn a Moral and Social Debate about a Futuristic Technology into a TV Series

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Dramatizing Human Enhancement: How to Turn a Moral and Social Debate about a Futuristic Technology into a TV Series Screenplay

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Abstract

This PhD dissertation is a “research-through-creation” project, which set out to explore and gain insights from the process of writing a science fiction TV series pilot screenplay, that deals with the morally charged subject of human enhancement.

Science fiction is a very important genre in today’s rapidly changing world, with its continuously advancing technology. Science fiction novels, movies and TV series play a major role in creating a social, moral and cultural discourse about how we, as humanity, can and should deal with current and future technologies and lead the way we evolve. Human enhancement is one of the major technologies whose potential evolvement could disrupt and change society and humanity in a significant way by offering humankind the possibility to transcend natural selection and control how it will develop.

The science fiction writer is in a unique position in which he/she needs to mediate science, technology and their psychological, moral and social possibilities in the form of story and drama. When done so successfully, the science fiction writer’s work can offer value by contributing to the social discourse.

Researching this unique position, between science, social relevance and storytelling, is at the heart of this work. Its objective is to articulate insights and conceptualizations for the considerations, actions and creative decisions required to accomplish this kind of a challenge.

To do so I have written two science fiction TV pilot screenplays, an earlier version and a later version. In parallel, I have studied the subject of human enhancement both for its scientific aspect and its philosophical and social aspect, and also studied about the theory and practice of science fiction writing, with an emphasis on stories that deal with human enhancement and current science fiction TV series. The two lines of work inter-related and complemented each other. The study of human enhancement and science fiction took part in the progression of the writing from the initial screenplay to the final one, which is considered by me to be more satisfactory in achieving both a good representation of the

social and moral issues of human enhancement, and in fulfilling the dramatic potential of the subject.

This dissertation includes the screenplays and other creative materials, preceded by a critical essay which describes the study of human enhancement and science fiction, and analyzes the development of the writing process leading up to the final screenplay.

The insights gained from the research highlight the importance of the science fiction writer's understanding of the technology he writes about (or the "novum" – the technological/scientific difference maker); creating a story premise which as a derivative of the technology; exploring the different moral, psychological and social aspects of the chosen technology and translating those to story conflicts and character motivations; and making story-world decisions that best serve the thematic issues the writer wants to convey.

Keywords: Science fiction; Human enhancement; Creative writing; Screenwriting; Research-through-creation; Practice-led-research; TV series.

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Introduction

The goal of this research-through-creation project is to discover processes, creative decisions, considerations and techniques that facilitate the writing of a science fiction screenplay in relation to an existing futuristic phenomenon and the social and moral debate around it. The creative project at the heart of this research is the writing of a science fiction TV series pilot screenplay that deals with the subject matter of human enhancement: a developing technological domain that deals with modifying and/or augmenting human capabilities and functions, such as the cognitive, physical, health-related and/or emotional abilities and traits of the human being. There is a turbulent moral and social debate around human enhancement technology regarding its potential threat to human society and human nature on the one hand, and the merits and even the necessity of such technologies to humanity on the other (Bostrom and Savulescu, 2009).

The science fiction genre has a very important role in helping society to understand, frame and discuss how the world can and should be in face of today's rapidly changing world and the present and future evolvement of technologies that can change life, society and humanity, like human enhancement. Historian and futurist Yuval Noah Harari writes:

> "At the beginning of the 21st century, the most important artistic genre is science fiction. Few are the people who read academic articles about Artificial Intelligence or genetic engineering. Movies like 'The Matrix' and TV series like 'Westworld' and 'Black Mirror' are shaping the way most people think about the important technological, economic and social developments of our time" ("21 lessons about the 21st Century", p. 246, translated from Hebrew)

According to Noah Harari, this places a responsibility on the shoulders of science fiction writers to represent the real issues and threats that technological advances present, and not to plant the wrong ideas or steer attention to secondary issues. In his eyes most of science fiction does not live up to this responsibility:

> "Science fiction is occupied with the possibility of war between robots and people, while what should really bother us is a struggle between an algorithm-enhanced super-human elite and a lower class of weakened 'homo sapiens'." (p.247)

So, Yuval Noah Harari thinks there ought to be science fiction stories about human enhancement and its social consequences.

The major creative product of this creation-as-research endeavor is a TV pilot screenplay called "Trans-H", which tells the story of life in a time when people are beginning to be able to purchase enhanced capabilities. In fact, there is more than one creative piece – another, earlier pilot screenplay called "California Republic" and an intermediate series synopsis called "California Nation". The research follows the progression of the work from the first attempt to the final one, the creative decisions made, the writing and the re-writing, the studying of the knowledge about human enhancement, science fiction theory and of other films, series and novels, and how this newly gained knowledge has affected the writing. The insights gained from this process and the reflection upon it are offered as conclusions and guidelines to the initial question of how to dramatize a futuristic debate into a science fiction screenplay.

This is not a conventional academic dissertation. It uses the unorthodox yet growing use of research-through-creation or creation-as-research (or practice-led research, Green, 2006). Haseman (2006) called this "performative research". Skains (2018) claims that practice-led research has been very common in engineering, medicine and design, and lately has started to evolve as a research method in creative writing. She describes the essence of practice-led research as:

> "Practice related researchers push this examination [the study of art, e.b.m] into a more direct and intimate sphere, observing and analyzing themselves as they engage in the act of creation, rather than relying solely on the dissection of art after the fact." (Skains, 2018, p. 84)

Mayers (2016) has described how the field of creative writing research has evolved considerably in the decade prior to his publication, with more writers-researchers publishing articles, emergence of new doctoral programs in creative writing, the foundation

of associations and dedicated journals and the publication of several books which solidified the foundations of the field.

One of those books is Jane Webb's "Researching Creative Writing" (2015), where she presents a conceptualization of what can be the goal of research-through-creation:

> "In the best cases, writer-researchers will deliver a fine piece of writing, an improved understanding about some aspect of professional creative practice and a new way of seeing the world" (quoted in Hedengren, 2016)

One of the more common methodologies for conducting research-through-creation is the use of reflective research (Green, 2006; Skains, 2018). Alvesson & Skoldberg (2000) define reflective research as interpreting one's own suppositions and subjecting one's own assumptions to critical review. The subjects of the reflection process could be practices, assumptions, conceptualizations, considerations and decisions. The reflective research of the artist tries to capture the internal process of creating, which is always unique and non-recurrent, and difficult to approach from the outside by other research methods.

There are probably over a hundred doctoral programs in creative writing today, among which are those offered by high ranking institutions such as Cornell University, University of Southern California, King's College of London, University of Edinburgh, University of Melbourne and more.

Creative writing dissertations are usually composed of two complementing components: a creative piece and a critical essay. The relations between the two parts are usually decided by the logic and the rationale of the project and the research. The critical essay should not stand on its own and must gain its meaning from its relation to the creative work. The creative piece should, of course, have value as a work of art regardless of any further explanations or interpretations. However, when it is part of a practice-led research, it is valued also for the insights and the learning that can be gained through it. Hence, reading the critical essay should also shed light on other layers of meaning that the creative piece offers, such as evaluating creative decisions and techniques used in the writing, and understanding the work in its creative context and in the context of the larger theoretical study that took place.

The structure and order of this dissertation is as follows:

Part 1 of the doctorate reviews the subject of human enhancement. It includes a review of the existing technology, the types of technology that can emerge, a brief review of the history of human enhancement and some evidence from science fiction and other sources to the interest that the subject creates. It then finishes with a review of the moral and social questions and debate about the subject.

Part 2 studies science fiction theory. It starts with looking at the major definitions, characteristics and impact of the genre, then covers theory and knowledge about science fiction writing and reviews some of the more known science fiction creations that deal with human enhancement in literature, film and TV (with a slightly greater emphasis on film and TV, since they are the result of screenwriting and similar in medium to this project) and then reviewing the current science fiction TV landscape.

Part 3 delves into the creative process, following it more or less chronologically from the emergence of the idea to write about human enhancement, through to the writing of the different drafts. Part 3 is written in a multi-perspective way, combining description of decisions, thoughts and products of the creative writing process, along with reflection on insights, self-evaluation, auto-criticism and interpretation. It uses evaluations from outer sources and offers a conceptualization about science fiction writing in the line of this creative process.

The creative pieces are presented after the critical essay in the chronological order of their creation – with the first pilot screenplay going first, the intermediate series synopsis second and the final pilot screenplay third.

This dissertation has a structure because it must have one. However, reading it can be done in a different order than the one presented. It is possible to "jump over" and begin straight with the screenplays, reading the last screenplay first or otherwise. I would recommend reading the screenplays either before reading the essay, or stop reading the essay before part 3 (or on the points in part 3 where I suggest reading the screenplays), then read the screenplays and only afterwards continue reading part 3 about the creative process.

The order in which the doctorate is arranged is not the order it was written, and it is not the order of the actual process. The meeting point of art creation and research is difficult to represent linearly because of the nature of the creation. Shklovsky (cited by Bordwell, 1991) referred to the creation of art as the knight's move in chess, which is the only piece that does not move in a linear way and can jump over other pieces. If you wished to try and read it similarly to how it took place in the entire research-through-creation process, it would go roughly like this:

1. The beginning of part 3 about the emergence of the idea
2. Some of part 1 – to learn a little about human enhancement
3. "California Republic" screenplay (the first pilot)
4. Review and self-evaluation of the first screenplay (part 3)
5. A little more reading about human enhancement (part 1)
6. Analyzing science fiction TV shows (the end of part 2)
7. Learning about science fiction (part 2)
8. "California Nation" synopsis
9. Review and self-evaluation of the synopsis (part 3)
10. More study about science fiction theory, and especially about writing (part 2)
11. Learning more about human enhancement and more about the debate (part 1)
12. Reading the part about "lateral work" in the creative process (part 3)
13. "Trans-H" screenplay
14. Review of the screenplay
15. Conclusions

So, the process of creative writing research is very dynamic and involves a lot of moves between writing, evaluating, reflecting, studying, conceptualizing, and all these steps "feed" and influence each other. This will be discussed further in part 3.

Throughout the parts of the essay I try to briefly explain why every chapter was important for the writing process or at least for the research.

Extended introduction: research approach and methodological framework

The research question and its underlying disciplinary assumptions

The main question that this work is trying to answer is what is the creative process (creative decisions, considerations, challenges, conceptual framework) involved in writing a science fiction TV series about a morally, psychologically, philosophically and socially charged technological subject – in this case, the technological domain of human enhancement. However, the question and its answers are applicable to the dramatic treatment of other emerging technologies and can serve as insights and guidelines that can help writers and researchers of science fiction.

At its core the research question is routed in the field of creative writing research (Alvesson & Skoldberg, 2000; Dawson, 2004; Smith & Dean, 2009; Webb, 2015; Brien, 2006; Green, 2006; Haseman, 2006; Haseman & Mafe, 2009; Skains, 2018; Sullivan, 2009) and its sub-field of the research of screenwriting (Baker, 2013, 2015; Batty et al, 2019; McAulay, 2017; Mathews, 2018). However, the assumptions underlying this question and its potential contribution crosses the boundaries of creative writing research:

- The social role and impact of the TV series medium in current days and culture, and especially of science fiction (which will answer why using the TV series medium for this research).
- The research of science fiction as a genre and as a narrative art.
- Philosophy in the narrative arts.
- Screenwriting.

This document will review the above mentioned disciplines in relation to the research question, describe in more detail the methodology of creative writing research (with an

emphasis on screenwriting research) and discuss the conclusions and their possible contribution to the different disciplines that this research is related to. The discipline of screenwriting will be addressed, as part of the chapter about creative writing research.

An important note: This research is the meeting point of several perspectives and disciplines. As mentioned, it is primarily a research into the creative writing process, but it corresponds and draws its assumptions from several fields of research and schools of thought.

One implication of the above-mentioned note is that the way most of the disciplines are related to the research is by looking at them from the different perspectives that the meeting of disciplines allows. For example: The contribution to the research of the science fiction genre is done by viewing the genre not from the conventional perspective of analyzing the completed work, but from the perspective of the process of creating a science fiction story and how the concepts that are used to research science fiction as a work of art (such as the "novum", Suvin, 1979) can be used to write it. The contribution to the philosophical debate about human enhancement is not done with the use of conventional philosophical tools, but through expressing this debate using dramatic and screenwriting tools and translating it to the form of a TV series screenplay.

A second implication is that this research creates its own unique combination of conceptual system or "space", not "following" or "continuing" any one specific disciplinary discourse and research system, but rather "fuses" tools of creative writing (screenwriting), creative writing research, science fiction, philosophy (of human enhancement) in light of the research question and the creative challenge. This is common in the relatively young field of creative writing research, as we will see later in a chapter about the Creative Writing Research approach.

Theoretical assumptions to the research approach

It can be said that the approach to this research draws on assumptions from the post-structuralist view of the art and society (Bourdieu, 1972, 1984) and from the systems theory philosophy (Laszlo, 1972), such as:

- Artifacts (such as creative works and intellectual products) are created and can be evaluated only in a context. In relation to this research, this assumption has two meanings: (a) The use of the science fiction TV series medium as a creative work is and should be situated in the context of the contemporary TV series world, the contemporary science fiction world, today's culture and its relation to technology and the future, audience's expectations, the eco-system of TV series production & consumption, the current theory of science fiction and so on. (b) The research presented about the creative process in this dissertation is also a composition created in a context (which is the heterogenic disciplinary origins of it).
- Meanings are the result of underlying conceptual systems. This assumption is central to the entire research into the creative process in this dissertation, since the central endeavor presented is to elicit a system for the creation of a science fiction TV screenplay, and assuming that a story is not just a series of events, but rather a composition that is built on a covert system of constructs (such as theme, premise, values, genre tropes and conventions, antagonism forces and so on). This approach to storytelling and screenwriting is evident in screenwriting teacher John Truby's work (2009).
- A system is defined by its components and their inter-relatedness. This notion, drawn from systems theory (Lazslo, 1972), might be aligned with post-structuralist ideas as well. Its meaning is that things affect each other in complex ways and the actual phenomena is the product of these inter-relations. This assumption influences this work on three levels: (a) As an approach to creative writing it places an emphasis on the relationship between the components that are at the basis of the story (i.e. the choices of character, obstacles, genre, pace, style, symbols, locations etc. form a story through the relations between them). (b) As an approach to the research of creative writing it implies looking at the creative process by its relatedness to the different factors that influence it (science fiction theory, the landscape of TV and science fiction TV, the background and psychology of the writer etc.). (c) As an approach to the study of film and TV it places an emphasis on the interactions between creative works, genres, audience and socio-cultural reception – the ways a novel, a film or a series is perceived, understood, interpreted

and accepted by all kinds of audiences is the result of the properties and aesthetics of the creative work, and the audiences' reaction to the work influences the evolvement of the genres and maybe the entire art form. Bourdieu's theory of distinction (1984) can be viewed as dealing with the inter-relationship between the artwork and the audience.

The TV series medium

Mittel (2010, 2015) refers to TV series as the most important, most influential art form today. He describes how TV series has evolved into a "golden age" of popularity and impact. The storytelling techniques of the TV series is developing as well, and Mittel points to the growing complexity of the TV storytelling: TV series have evolved from relatively simple, linear, episodic stories to stories that bend time, reality, morality and more.

The decision to write a TV series had several reasons that are routed in Mittel's claims:

- The TV series medium is extremely popular and gained a status of being the most influential, talked about and consumed narrative art form (maybe it is possible to drop the word "narrative"). Since the creative challenge is to write a work that will be able to transfer a philosophical debate into the public awareness, then trying to do so through a TV series seems like the best artistic vehicle.
- Aside from the potential impact of the TV series medium, it is also one that offers the width and the complexity to deal with complex notions. It is a medium that describes many characters, with various conflicts, situations and relationships and allows to develop all of these over a longer period of time. The richness of the "canvas" that the TV series offers the possibility to tell stories that cover many nuances of a subject such as human enhancement and its moral, psychological and social aspects. This is different from movies, which are shorter and usually revolve around a theme that can be defined as a statement (like with Robert McKee's concept of "the controlling idea", 1997, meaning the value that guides the story protagonist in his most important decision of the story; or with Linda Seger's

perception of theme that can be defined as a single subject, question or two distinct and conflicting values, 1987).

The creative choice of writing a TV series has implications on the theory and the research as well. It creates an obligation to take into consideration the existing theory about TV (and TV screenwriting) and find out how the research can contribute to it.

As the TV series phenomena grew, so did the academic research about it. The research about TV series can be roughly categorized as follows:

- Research that views TV series as an art form and studies its artistic tools, symbols, techniques and so on (Peakock and Jacobs, 2013; Revisto, 2019). For example: Sarah Hatchuel's research about the creation of a cinematic dream-like experience in American TV (2016) and about shows such as "Lost" (2013) and "the Leftovers" (2019). This research draws from hermeneutic traditions in deciphering the composition of the artwork and connecting the use of symbols and techniques to the artistic experience. Mittel can be categorized here as well.
- Research that examines the representation of real-life concepts or phenomena in TV series. For example: Morin's work on the way families and feminism is represented in series (2019), Albrecht's work about the images of masculinity in series (2015), Rollins' and O'Connor's work about the representation of American Politics in the series "The West Wing" (2003), Askanius' work on the concepts of the relation between citizenship and identity in the Swedish series "The Bridge" (2019) etc. As the prior category, this is also a research approach that focuses on the series as an artistic text and analyses it as a completed work of art.
- Research that examines the social, cultural and sometimes the psychological influence of TV series. For example: Beseley's work on series' influence on political participation (2006), Couldrey et al.'s work on media consumption (mainly series) and public participation (2010), and research about youth suicide and suicide tendencies after the release of "13 reasons why" (a series that revolved around the suicide of a teenage girl; Niederkrothentaler et al, 2019).
- Research about the TV series industry, production process, economic considerations and its effect on the storytelling (Defino, 2013).

The possible contribution of this dissertation to the research of TV series, is by providing the new perspective and methodology of creative writing research to the study of TV series. There is literature and theory about TV screenwriting, yet most of it is not academic nor done from the point of view of the writer. The writing of a TV series is different from the writing of a feature film for reasons that are similar to those mentioned as supporting the decision to write a TV series:

- It uses a wider "canvas" – more plotlines, more characters etc.
- It can cover themes in a much deeper and broader way.
- It enables to form a "conversation" with the audience (for example: writing a second season is usually done after the completion of the first season, and the writers know the way the series was accepted and perceived, which characters are liked, in what way the audience interpreted the story).
- Screenwriting, and TV series screenwriting.

An academic work of creative writing research can begin to explore and shed light on the creative process of TV series, which is an angle currently missing from the research about TV series. This specific dissertation cannot provide the full scope of this perspective and research potential, but it can open the discussion and contribute the first drop focusing on the creative process of the craft of designing a TV series and writing a pilot screenplay.

Science fiction as a field of theory and research

A second discipline that serves as a route to this research is the study of science fiction.

The theory about the science fiction genre and the literature that deals with science fiction writing is covered in depth at the body of the dissertation itself. It is comprised from discussing definitions for science fiction; examining if it is a genre of its own and how it is constructed and functions as a genre; the artistic and narrative properties of science fiction; and also the dynamics and role that science fiction takes in culture and society. Prominent researchers mentioned later in the dissertation are Adam Roberts (2006), Carl Freedman (2000) and Darko Suvin (1979).

A great deal of the research of science fiction shares its qualities and points of view with those of the research of TV series, as it is with other types of art and literature research. It is a research of the text, its use of conventions, the way it reflects concepts, phenomena and structures from the world and the way it influences culture and society. Studies in the field of science fiction have tended to deal with more philosophical, moral and political issues than with other subjects (as can be shown with the works of Baron et al., 2017; Bukatman, 1993; McSweeney & Joy, 2019; Vint, 2017; Jorgensen, 2017).

Science fiction is referred to as a storytelling form that creates "an estrangement space" or "distanciation" (Ricoeur, 1973), which enables the exploration of alternative possible "arrangements" of the world. This quality of the genre gives it a unique philosophical quality: Roberts (2006) says that science fiction is a genre that allows "thought experiments"; Freedman (2000) refers to science fiction as a storytelling version of the critical theory philosophical approach; science fiction author Ben Bova (2016) calls for using science fiction to write "thematic novels", meaning stories that provide deeper and more profound moral and social arguments than other genres. In this sense the writing of a science fiction story, under certain terms, can be considered in itself as a type of research. This is one of the assumptions and goals of this dissertation: to examine if it is possible (and how) to create a narrative artistic expression for a philosophical debate. This idea will be discussed further in a later chapter (as mentioned in the beginning – because this research crosses several disciplines and tries to contribute to them through the lenses of using tools and concepts from other schools, the "jumps" and inter-referrals like the one before this parenthesis are unavoidable).

The possible contribution of this research to the study of science fiction resembles its potential contribution to the study of TV series: it provides the creative-writing-research "insider" point of view to the creative process. If most of the research on science fiction examines the work as an artifact "from the outside" – the creative writing research can complement it and broaden the discussion by referring to the writing process. The potential contribution is greater than for the general topic of TV series – this creative writing research in science fiction can use the specific knowledge and concepts about science fiction and examine them as a creative tool. For example: can the concept of "novum" (Suvin, 1979),

which is central to understanding science fiction, be used as a creative concept? How does it support the creation of a science fiction piece? Does understanding science fiction as providing an "estrangement space" for exploring alternative realities is helpful for the writer? Corresponding with the research about science fiction through the tools of creative writing research can validate the insights gained in this field and enrich them.

As far as surveyed for the purpose of this research, there were no examples of science fiction creative writing research publications. However, it is important to note that several of the prominent researchers are authors themselves (like Adam Roberts), and other science fiction authors who also wrote about the writing of science fiction (Bova, Orson Scott Card) hold teaching positions in universities and appear in academic conferences about the genre, even if they don't practice academic research.

Philosophy and storytelling

Since its beginning philosophy and storytelling have been bound together. Philosophers have used stories to convey their ideas ever since Plato and through Voltaire, Nietzsche and many others, and writers and filmmakers expressed philosophical ideas, used and explored them in their work in various ways (Critchley, 2004; Falzon, 2002; Freeland & Wartenberg, 1995; Unger, 1991; Nash, 1990; Smith & Wartenberg, 2006; Livingston, 2009; Livingston & Plantinga, 2008; Vaughan, 2013; Lamarque & Olsen, 1994; Lang, 1990; Bordwell, 1991).

This strong connection between philosophy and stories is eminent to the nature of stories which are built on conflicts, try to explore the different sides and the negating values around the conflict (McKee, 1997). Stories, in this sense, are dealing with questions, problems and values of life through an imitation of life.

As mentioned in the previous section, science fiction is a genre that is even more suitable to handle philosophical issues (or at least certain types of philosophical questions) because of their nature as "speculative arts" that creates worlds that are different than ours (Gunn & Candelaria, 2005). The creation of a different world, or telling a story that deals with how a technology affects the world, almost "forces" the writer to make decisions about the

values and the relationships between concepts in the eco-system he creates (the quotation marks around the word “forces” are there because it is part of the joy of writing a science fiction story). There are many academic analyses of the treatment of philosophical ideas in science fiction novels and films (Schneider, 2009; Shanahan, 2014; Irwin et al., 2009; Palumbo, 2003; Clark, 1995). In the TV series medium, shows like “Black Mirror”, “Westworld” and most notably “Battlestar Galactica” have been the subject of plenty of studies that examined their treatment and use of philosophical ideas, covering a wide range of philosophical questions from political science (Kiersey & Neumann, 2013; Litmann, 2019), morality (Steiff & Tamplin, 2008; Johnson, 2019), power and socio-economic differences (Byron & Brake, 2019), crime and punishment (Sievers et al., 2019; Simpson & Lay, 2019), consciousness and the nature of knowing and knowledge (Eberl, 2008; Stiltner & Vaughn, 2019) and even religion (Klassen, 2008).

Posthumanism is a philosophical subject that science fiction is especially well equipped to handle, and a source for numerous studies that analyze its treatment in science fiction (Gomel, 2014; Vint, 2007; Dinello, 2005; Haney, 2006; Hawk, 2011). It is a subject that deals with the future of humanity and the way that advancements in technologies can change it. It is not surprising that many science fiction creations, among them several TV series (“Westworld”, “Akta Manniskor”, “Battlestar Galactica”) have dealt with aspects of posthumanism. Human enhancement, the subject of this research, is one of the major topics in the framework of posthumanism, however it received less expression in popular culture and especially in TV series than other posthuman issues, such as Artificial Intelligence and encountering other advanced life forms. The important literature about the philosophy of human enhancement is covered in the next chapter of the dissertation.

There are several ways by which storytelling and philosophy interact:

(a) Stories that deal with themes that are based on philosophical issues help in transferring the philosophical debate into popular culture and from there to the public attention. For example: “Blade Runner” popularized the discussion about the posthuman question of the moral rights of artificial self-consciousness. This is one of the intentions in writing a TV series within the framework of this work: to write a screenplay for a TV series that will have the potential of raising public awareness

to the moral, psychological and social questions and dilemmas that the advancement in human enhancement technology can incite.

(b) Stories can provide philosophy and philosophical thought a "large scale and holistic simulation" of the philosophical inquiry. When writing a story, the writer creates a complete system of characters, locations, motivations, events, values, institutions, ecology and so on, and this could serve as a thought experiment in developing philosophical ideas on a systemic level. The use of the word "holistic" means that in a story the philosophical issue is not isolated – when dealing with a moral question, the story can (and even must) refer to the emotions, value systems, impact on others and so on.

Here is an example from "Trans-H", the screenplay written for this research: One of the philosophical issues of human enhancement is the danger of growing inequality between the enhanced and the non-enhanced (Noah Harari, 2018). In "Trans-H", a character called Sierra Newman builds a company that manufactures very expensive implants that can boost cognitive abilities. She claims that the results of using the implants will provide people with better abilities. It will induce them to develop technologies that will benefit all the people, like medical technologies, improving climate issues etc. However, one of the consequences of the new industry is having people who cannot afford the implants feeling they become second-rate citizens. This, in turn, leads to the evolvement of a pirate industry of cheap implants that people take with risk. When a girl whose parents wanted her not to be a second-rate person bought her such an implant enters a state of coma – Sierra now has to face emotions of guilt about a reality that emerged as a consequence of her actions. The same event also raises a demand for heightened regulation over enhanced people and her company. The ability (and even necessity) to explore all kinds of consequences, dimensions and inter-relations deriving from an issue is a tool that storytelling, and especially the TV series medium with its wide canvas, can offer.

Following the second point, a more daring claim can be made – that under certain conditions the writing of a story, especially science fiction, is in itself an act of philosophical research. When a writer needs to connect and invent a coherent system that

incorporates events, characters, motivations, emotions, a story world built with an eco-system, institutions etc., the creation of such a system, if successful in being coherent and related to the theme, demands philosophical reasoning (which is sometimes conscious for the writer and sometimes intuitive and hard to explain) and can contribute its rules and relations to the philosophy. This is why many stories become the source of philosophical investigation.

One of the contributions of this dissertation consists in gaining insight into the process of writing a story that is created with the intention of expressing and simulating a philosophical issue. Derivative questions can be: How does the study of the philosophy contributes to the development of the story (if at all)? How does the "translation" of a philosophical issue into the form of a TV series screenplay reflect on the philosophical issue and helps look at it differently?

As with the prior disciplines discussed – most of the academic work linking between philosophy and storytelling is done in relation to the completed work of art, and the perspective of its creation is relatively missing. Applying the methodology of the creative writing research to this subject can begin to provide insights and concepts to this aspect.

Creative writing research

Because this research is a creative writing research, and because this is an atypical and relatively new academic field, it is important to devote a chapter in this document to the development of this field and its methodologies.

This chapter will refer to:

- The emergence and assumptions of creative writing research, and its academic eco-system.
- The main research methodologies of creative writing research.
- The screenwriting as a discipline and this research potential contribution to it.
- Screenwriting within the field of creative writing research.

This chapter will provide a needed forward to the next chapter that will elaborate the methodology of this research.

The paradigm of creative writing research

At the beginning of the introduction there is a quote by Skains (2018) that describes the essence and the goal of creative writing research (which is a "practice-led research" approach applied to creative writing):

> "Practice related researchers push this examination [the study of art, e.b.m] into a more direct and intimate sphere, observing and analyzing themselves as they engage in the act of creation, rather than relying solely on the dissection of art after the fact." (Skains, 2018, p. 84)

The meaning of this claim is that while most of the academic research in art is based upon the hermeneutic tradition of interpreting the text by trying to reconstruct the meaning that was in the mind of the creator, and assuming that the impact of art is the way this meaning is interpreted by the audience of the creation and through this interpretation triggers a change in the audience's mind (Schleiermacher, 1819/1978; Schleiermacher in Palmer, 1969; Heidegger, 1950; Gadamer, 1960; Ricoeur, 1973, 1981; Bowie, 2003) – hence views the product of art from the outside and as a completed work, the creative writing research seeks to explore the space that exists between the writer and the work. In this sense, the creative writing research aims at completing the hermeneutic tradition with praxis.

The usage of the concept of praxis has grown in the philosophical and intellectual discourse through the work of Hannah Arendt (1958). Arendt placed a great deal of emphasis on the actions of people and on the "theory of action" that guides them, meaning the assumptions, interpretations and understanding of the world, which can be dynamic, that through which the person forms an intention and acts upon it. Arendt, and also Freire (1970), used this term mainly for political action, referring to the process by which people reach a perception of the political situation and decide to act upon it to achieve a change. However, the concept of praxis can be used in many domains (Lanir, 2013). Drawing on the works of Arendt and

Freire, the praxis can be shared or discussed, meaning that as a knowledge it is not just a personal knowledge, but a subject of exploration and discourse.

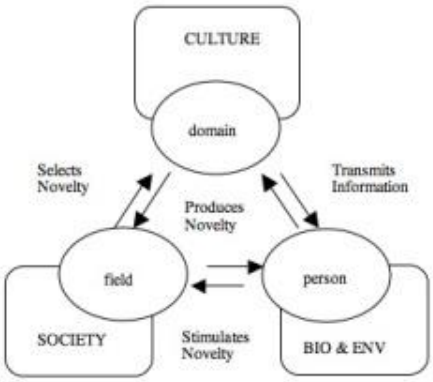
The meaning of the praxis concept also resembles to some extent Bourdieu's "theory of practice" (Bourdieu, 1972; Bourdieu & Wacquant, 1992), by which a person can use his "practical sense" and methods of reflection to understand the system (or the "game") in which he operates.

Praxis is a term that combines action and reflection (Freire, 1970). Its development is based on action in the natural and social world (Scott and Marshal, 2009) and involves a cycle of taking action, reflecting on both the results and outcomes of the action and the assumptions and understandings that preceded it, then changing or adjusting those assumptions if needed and using the new understanding to take the next action.

The philosophical term of praxis is very close to terms from cognitive psychology, such as schema (Piaget, 1923) and heuristics (Simon, 1947; Kahneman & Tversky, 1982). Both these terms refer to the internal concepts a person holds, which can be explicit or implicit, that he uses to solve problems and make decisions. The lessons from cognitive psychology suggest that the praxis can evolve in the process of acting and reflecting (Kolb, 1983).

Creative writing research (and the entire practice-led research domain) is a field of research that mainly deals with the praxis of storytelling. This means that it involves action – writing a story, and reflection into the creative process, combined with an appraisal of the work, to generate knowledge about the creative process in the context of the creative challenge. The underlying assumption is that the knowledge created through this methodology can be shared and contribute to other writers and researchers of the creative process. It might also be valuable to the academic discourse about the subject matter of creation by completing the knowledge created through the hermeneutic tradition with insights from the praxis of the art (for example: the study of science fiction can be comprised of the study of completed works and the study of the creative process of a science fiction story).

Another foundation for creative writing research, that might offer a more unifying approach that relates to both hermeneutics and praxis, can be found in the Csikszentmihalyi system's model of creativity (1996):



Csikszentmihalyi views creativity as occurring in a system or a context, in which the creative person gains knowledge of a domain, rearranges connections or concepts in that domain and transmits it back to the domain (through the mediation of society) and hereby changes it. Applying this systemic model to creative writing research means that the writer-researcher is not only reflecting on his own mind, but also examines and relates to the context and the domain in which he operates as an input (how the genre, the eco-system etc. influences his writing), and at the same time as an output (envisioning the social reception of his work and uses it as a source in his creation). A similar idea can be found in the "cognitive process model of composition" (Flower & Hayes, 1981), that suggests looking at the artist's creative process as made of three cognitive elements: (a) The artist's knowledge of the topic in which he wants to create (genre, subject matter, context, audience etc.). (b) the task environment. (c) the creative process itself (planning, the actual work etc.). Flower's and Hayes' model can serve as a framework for accessing the content of the creative writing research' investigation.

The methodology of creative writing research will be discussed in more detail later in the relevant chapter, and in the chapter describing the methodological approach in this research.

Creative writing research as an academic discipline

Creative writing programs have existed in the academy for a long time, however the discipline of creative writing research as a recognized institutional academic field is rather young. In the "Creative Writing Research Benchmark Statement" published by the British

national association of writers in education (NAWA) in 2018, it is noted that the first British doctoral candidate in the field received his doctorate in 1990. The field has grown fast with Harper estimating in 2008 that in the United Kingdom there are 400 active doctoral students in creative writing research. On the same year Boyd identified 199 completed doctorates in creative writing research in Australia between 1993-2008. Those numbers don't take into account the number of doctorates done in the United Stated, which might be larger due to the greater number of universities offering this option.

In more than a decade since, the field has grown even more, and today most of the universities in Great Britain and Australia, many universities in the United States and some in other countries offer doctoral programs in creative writing research.

Following is a list of a few of these universities, along with links to the descriptions of the programs (The list has been screened to include mainly universities which' websites are more elaborated):

https://dornsife.usc.edu/cwphd
University of Southern California

https://arts.unimelb.edu.au/school-of-culture-and-communication/study/creative-writing
The University of Melbourne

https://www.kcl.ac.uk/study/postgraduate/research-courses/creative-writing-phd
King's College of London

https://www.du.edu/ahss/english/graduate/creative-writing-phd/
University of Denver

https://english.fsu.edu/programs/creative-writing
Florida State University

https://www.ohio.edu/cas/english/graduate/creative-writing
Ohio University

https://engl.uic.edu/programs/graduate-studies/program-for-writers/
University of Illinois in Chicago

https://www.uh.edu/class/english/programs/graduate-studies/creative-writing-full/phd-creative/
University of Houston

https://www.ed.ac.uk/literatures-languages-cultures/english-literature/postgraduate/phd/creative-writing
University of Edinburgh

https://www.birmingham.ac.uk/postgraduate/courses/research/fcw/creative-writing.aspx
University of Birmingham

https://www.liverpool.ac.uk/study/postgraduate-research/degrees/creative-writing/
University of Liverpool

https://sydney.edu.au/arts/slam/research/creative_writing/index.shtml
University of Sydney

In most cases the creative writing PhD is part of the literature of the language departments, and in some cases, it is linked with programs of communication and media arts.

In the past creative writing researchers who wanted to publish articles turned to journals about literature, culture, communication and media (which is evident in the bibliography of this work). This is still the case, but in the past decades, established several academic and peer reviewed journals were dedicated to creative writing research:

https://www.tandfonline.com/loi/rmnw20
New Writing: The International Journal for the Practice and Theory of Creative Writing

https://scholarworks.rit.edu/jcws/
Journal of Creative Writing Studies

https://textjournal.scholasticahq.com/
TEXT: Journal of Writing and Writing Courses

Upon completion of this research, it might find a stage for publication in either one of the above-mentioned journals (who also cover the research of screenwriting) or in journals dedicated to the research of television, film and science fiction.

As a relatively young and emerging field, there have been several scholars who try to portray its boundaries and characterize it as an academic and research discipline (Webb, 2015; Donnelly, 2009; Dawson, 2004; Barbazon & Dagli, 2010; Harper, 2007; Kroll, 2012; Mayers, 2016; Suya Lee et al, 2016; Smith & Dean, 2009). Much of the principals developed through their collective works about the foundations of the field is summed up

in Derek Neal's "Creative writing research benchmark statement"[1] from 2018, done in behalf of NAWA. The benchmark statement defines the field of creative writing research and provides guidelines to its assumptions and methodology, as well as guidelines to PhD candidates and supervisors in the field. Here are some of the points made in the statement:

> "The most common mode of Creative Writing research is creative practice. Creative practice research can include a range of methods, approaches and styles, including those variously labelled as practice-led research, research-led practice, practice-based research and practice-as-research. The commonality in all types of creative practice research is that the researcher produces a creative work. The process of artistic practice and its resulting output are perceived as contributions to knowledge.
>
> In most higher education institutions in the UK, but not all, creative practice research also involves the production of a critical investigation and often a critical, reflective or analytical output. Such outputs can relate to any aspect of the creative work or process.
>
> Creative practice research entails research into the process of artistic production, often called the 'creative process', though it may embrace multiple processes. In this sense, the making of the work itself forms research into the way that it is composed, and the way it is presented, its content, form, craft, and technique.
>
> Research is also manifest in investigation into contexts related to the creative practice. This contextual investigation might be historical, cultural or literary or involve various interdisciplinary investigations. In this way creative practice research – the artistic process and/or the critical reflection – can engage with a range of theoretical positions and disciplinary areas.
>
> Though varieties of critical research might also be undertaken, creative practice research primarily uses the act of writing to explore, articulate and investigate new branches of knowledge and understanding.

[1] Source: https://www.nawe.co.uk/Private/17547/Live/NAWE%20Research%20Benchmark%202018.pdf

> Creative practice research can result in critical works, and these can be connected to, combined with, embedded within, or stand relatively free from, the practice that informs them. However, there is usually at least a symbiotic link between the two; they are often in dialogue with one another and in effect pose questions, which are reciprocally addressed.
>
> The research is often fluid and responsive, the creative writer utilizing emotional, intellectual or psychological stimuli to shape their work in mutative ways that may be difficult to plan for or predict.
>
> Creative Writing is not primarily a vehicle for what may be termed 'factual' knowledge, but a synthesizing process that brings about both knowledge and emotional awareness through imaginative interpretation and representation of experience.
>
> The actions of Creative Writing research inherently include investigations and explorations both in and of creative practice, whereby experience is transmuted into language."

Methodologies of creative writing research

As described before, the creative writing research attempts to create knowledge on the praxis of the creative process. The basic modes of research are action (practice) and reflection. Around this foundation, there could be many variations and methods.

The things that separate the creative writing research from just the practice of creative writing are (based on Neal, 2018, and Skains, 2018):

1. It is a process that begins with a question or a problem. The question/problem can be about the creative process itself, the genre, the rules or symbols of the art form, the situation and circumstances of the writer, an external subject matter that becomes the subject of writing and more.
2. Throughout the creative-research process there are deliberate actions that are directed at expanding the knowledge around the question/problem (these might include reflection and/or auto-documentation, studying, consulting, attending workshops or undergoing specific experiences and more).

3. The writer-researcher evaluates and interprets data he documented or collected in the course of the writing (thoughts, insights, intentions, decisions, actions, attempts etc.) in light of the question/problem.
4. The "output" of the work conveys not just the artistic work, but also communicates in some way the knowledge and insights gained about the question/problem. This can be done in the work itself, but the convention of the field is the writing of an exegesis or critical essay that accompanies the creative piece.

Creative writing research "belongs" to the methodological family of qualitative research. Flick (2007) characterizes qualitative research as follows:

> "...to understand, describe and sometimes explain social phenomena "from the inside" in a number of different ways:
>
> • By analyzing the experiences of individuals or groups. Experiences can be related to biographical life histories or to (every day or professional) practices; they may be addressed by analyzing everyday knowledge, accounts and stories.
>
> • By analyzing interactions and communications in the making. This can be based on observing or recording practices of interacting and communicating and analyzing this material.
>
> • By analyzing documents (texts, images, film or music) or similar traces of experiences or interactions." (Flick 2007: p. ix)

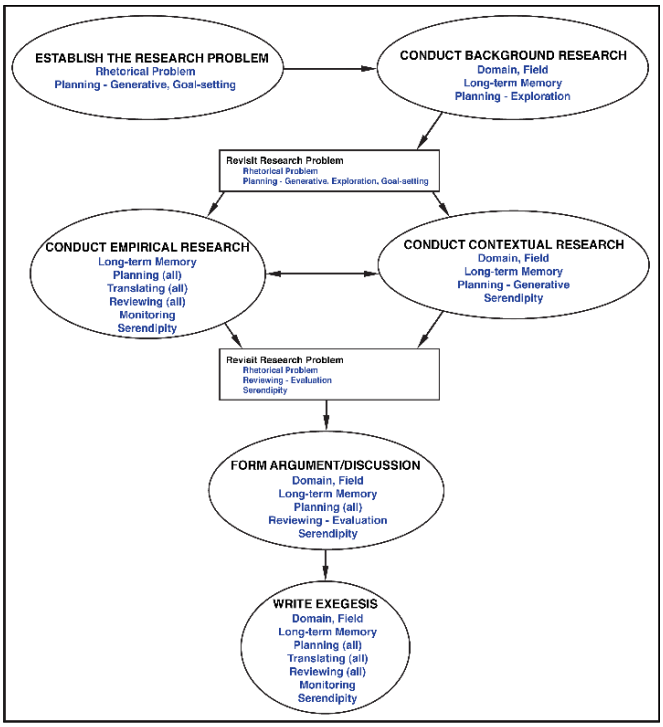
Creative writing research shares the definition of understanding the phenomena (of creative writing) "from the inside" and operates by the first (analyzing experience) and the third (analyzing documents) categories that Flick portrayed.

However, creative writing research is different in nature from more traditional types of research and contains characteristics and limitations that need to be acknowledged. One of which is that the course of research is influenced by the dynamic nature of the practice – the creative process (this is also true in other practice-led research fields, like in engineering, design, medicine and others). The creative process isn't linear and cannot be accurately planned at its beginning. Therefore, a research done around it needs to have a framework that allows for the creative process to take its course, while being loyal to the

process of generating knowledge that answers the question/problem (the question/problem itself might change throughout the process).

Such a framework can be found in Kurt Lewin's "action research" (1946) paradigm, which is done by taking "a spiral of steps, each of which is composed of a circle of planning, action and fact-finding about the result of the action". Lewin developed this method for social sciences, yet its principles of switching between action and research (or sense-making) apply nicely to the needs of creative writing research.

Skains (2018) have tried to combine the different elements of creative writing research discussed, along with Csikszentmihalyi's and Flower's and Hayes' models to form a cohesive framework for creative writing research:

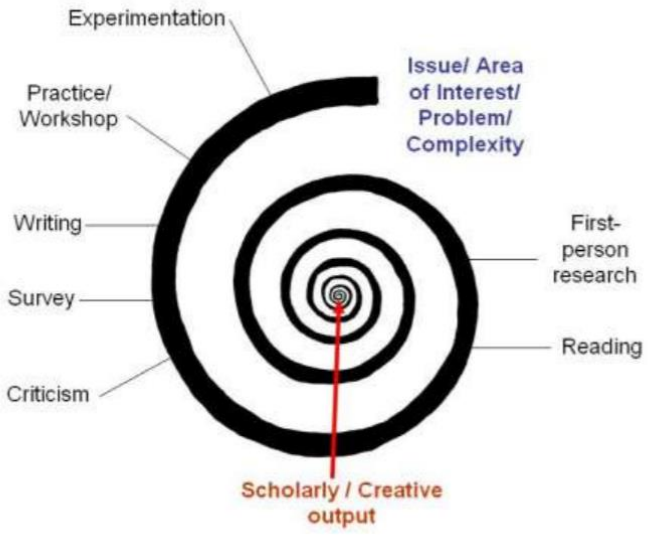


Skains uses the term "conduct empirical research" for doing the actual practice of writing combined with documenting contents that emerge in the cognition of the writer. She advocates including auto-ethnomethodological methods in the course of the writing-research (such as conducting a writing journal, and documenting self-remarks), and also a step consisting in evaluating the finished work "from the outside".

A major take-away from Skains' model is its nature as a dynamic process and that even the research question is revisited and most likely even rephrased throughout the process.

Another methodological model for creative writing research is proposed by Boyd (2009). Boyd also seeks to adjust the needs of research to the erratic nature of writing. She uses the term "strange loop" proposed by Hofstadter (1979) to organize the writing-research process. A "strange loop" means a cyclic movement through various levels, which relate to each other in a tangled hierarchy. Moving in a "strange loop" means that one can find himself at the starting point again throughout the process and doesn't necessarily knows if his next move is "upwards" or "downwards" and might be both in some senses. The "strange loop" differs from a spiral by that the "up" and "down" are not clear, and by that it is made from a tangled hierarchy of levels (for example: in creative writing all the different components from the Csikszentmihalyi's model could serve as a "level" – as the writer "visits" levels of craft, subject matter, theme etc.). Every "movement" in the loop can be viewed as a cycle that incorporates actions on different levels.

The way Boyd describes the methodology she proposes is as follows:



In a simpler, more linear way, Boyd suggests the following steps in a creative writing research:

> "1. Specify an area or areas of interest, problem and/or complexity, acknowledging these may change as a result of the research process
>
> 2. State an initial intention of what will be included in the first „loop" of the research (e.g. writing, reading genre, reading theory, experience, sketching, survey)
>
> 3. Conduct the research
>
> 4. Add or subtract items in the research "loop". Steps 1 - 4 will spiral the researcher toward a closer understanding of the issue
>
> 5. Restate the area or areas of interest, and
>
> 6. Reiterate and refine until the output is complete."

One important emphasis that Boyd suggests over Skains' methodology (which shares many features, and differ in some aspects and points of view – for example Skains' greater emphasis on the cognitive process of creation) – is the use of changing but planned actions that the writer takes throughout the process, such as going to a workshop, reading theory, watching and analyzing other creations etc.

The discipline of screenwriting

A major field that this work could contribute to is the domain of screenwriting teaching and theory. Screenwriting theory for the most is a professional discipline, not an academic one. There is an abundance of books, theories, courses, webinars and other instructional materials, which are meant for screenwriters in all stages of their careers. This knowledge world is targeted at the purpose of writing good screenplays – with "good" usually refers to the commercial value of the screenplay, and sometimes also to its artistic value.

The way this knowledge has been created resembles the two perspectives covered earlier regarding the research of art and stories: (a) analyzing films and TV series for their attributes and then translating this observation into an organized theory about how to write a good and/or commercially effective screenplay. Most of screenwriting theorists who use this approach are not screenwriters themselves (Campbell, 1949; Field, 1979; Hauge, 2006;

Seger, 1987; Vogler, 1992; Truby, 2009). The fact that these story theorists are not screenwriters themselves does not mean their conceptualizations are any less good than others, it only means they employed a method of analyzing films, series and screenplays to form their theory (it is important to mention that many of those theorists have worked extensively as consultants to screenwriters, so most likely have also gained understanding about the creative process itself – although it is always an "outsider" point of view). (b) creating the knowledge about storytelling from a personal experience as a writer, coming up with concepts that the screenwriter used and found helpful. Notable screenwriters-theorists are Snyder (2005), McKee (1997), Russell (2018), Bork (2018), Bonnet (2006). This method of creating knowledge about storytelling is similar to creative writing research, only done not under an academic framework and differs in the way it defines the goal of the work – producing knowledge that will help writers write better and more sellable screenplays, as opposed to creative writing research that is aimed at gaining insight into the conceptualization of the writing process in relation to questions that deal with better understanding phenomena and processes of art, culture and creation.

Another rough way to categorize screenwriting theories is by their overall approach to storytelling. There are two very general approaches: (a) "sequential" story theories that are focused in identifying and portraying the effective sequence of events that will make the story effective to audiences. The concept of three-act structure, greatly influenced by Aristotle's "Poetics", is probably the most famous and recognized "sequential" story theory. Other story theorists whose work can be described as belonging to this group are McKee, Snyder, Field, Vogler and Campbell (the last two are known for promoting the "monomyth" approach to storytelling). (b) "systemic" story theories that are focused more on the internal structure that underlies beneath the actual step-by-step layout of the story. These approaches place greater emphasis on the designing of the story components, like the characters, their relations, their motivations, the obstacles and the rivalries in the story, the exploration of the theme, the use of genre conventions and so on. The approaches of Truby, Burk, Russell and Bonnet can be characterized as such.

These two roughly categorized approaches share one strong basic assumption – that there is an internal structure to good storytelling that needs to be identified. In this sense, the

majority of the screenwriting theory world is influenced by the structuralist school of thought.

When it comes to writing a TV series the number of dedicated story theories decreases (although with the growing popularity of this medium this gap is starting to fill up). When considering the applicability of story approaches to TV series, the "systemic" approach seems to have a clear advantage, since most of the "sequential" approaches are designed mainly around the length and dynamics of a feature film (or maybe a novel). A TV series, by nature, is a much longer, more branching story (see for instance a sample of branching narrative patterns: https://prezi.com/p/yo26wrcsa_ax/interactive-storytelling/), not as "tight" and "lean" like the film. It is much harder to form a "sequential" approach to current TV series that stretches to seasons. The three-act structure, for example, or Snyder's "beat sheet", might cover an episode, but the series story of today is less and less episodical. The "systemic" approach allows for the design of dynamics and "story engines" which can support a season or more. This could be the reason why out of the notable screenwriting teachers, two who are also known more than others for their explicit work on TV series storytelling come from a more "systemic" approach – Truby and Russell.

As for screenwriting in science fiction – very few story theorists and teachers have referred directly to writing science fiction and even fewer to writing science fiction TV series. Again, the two that appear in this niche as well are Truby and Russell.

Therefore, the contribution of this work to the knowledge world of screenwriting is by broadening the scarce existing knowledge of science fiction screenwriting, and moreover of science fiction TV screenwriting. It can also contribute by putting to use some principals of TV screenwriting (mainly by Truby and Russell), and learn about the use of it in creating the series which is part of this work.

Screenwriting in the academic creative writing research field

Within the field of creative writing research exists a niche that deals with screenwriting. Some of the journals of creative writing research have dedicated issues to screenwriting research: "New Writing: The International Journal for the Practice and Theory of Creative

Writing" (volume 13.1, 2016); "TEXT: Journal of Writing and Writing Courses (volume 19, 2013).

Batty (2016) described that many of the screenwriting research up to that point linked screenwriting to other subject matters (for example: sociological contexts) and called for more research on the actual screenwriting work.

Batty and McAulay (2019) define the screenwriting research practice as follows:

> "a practice in which the screenwriter makes use of the intellectual space offered by the academy and those within it to incubate and experiment with ideas, with the intention that their processes or their screenplays – or both – change as a result."

The 2013 issue of "TEXT" dedicated to screenwriting published several screenplays that were written as research. Each of these screenplays was written with an intention to explore the execution of pre-defined goals and subjects, such as memoirs (Baker, 2013), the news broadcasting manipulation to grow audience (Batty, 2013), a documentary screenplay exploring concepts of the relations between a person and a place (Davis, 2013), the use of fictional screenwriting in referencing and complementing real events (Beattie), screenwriting exploration of themes associated with white inheritance (Hassal, 2013) and more. All these screenwriting challenges differ from plain screenwriting by their commitment to explore the creative process (decisions, techniques, the writer's learning throughout the process etc.) which is related to a subject. It is a deliberate and reflective endeavor initiated with an intention and commitment to produce both a work of art and expand the knowledge of the creative process and/or the ability of screenwriting to represent and disseminate ideas from other domains.

The same paradigm is applied to the creative writing PhD's in screenwriting. Two examples for screenwriting doctorates are by McAuley (2017) and Mathews (2018). McAuley is a western screenwriter who loves Japan and intents in his creative research to write a screenplay that is "Japanese" and "transnational" at the same time. Throughout the writing he explored the way his own perceptions and experiences in Japan influenced his writing and how he found solutions to use his point of view to make the screenplay be

considered as authentically “Japanese”. McAuley’s research is about the creative research of a screenwriter in a unique situation and facing a specific challenge.

Mathews’ research is about the professional screenwriting concept of the “character arc”. He wrote a romantic comedy and throughout the writing process tried to understand better the concept, put to use and examination the way existing screenwriting theories gave guidance to the character arc. In the writing-research he realized that the way this concept is presented is not sufficient – and offered definitions and practices to fill this gap.

Reviewing the two doctorates shows the diversity of questions that a creative writing PhD in screenwriting can cover – in one case a unique writing challenge related to the personal experience and situation of the writer, in the other an exploration into one of the craft’s concepts.

The research method

The creative challenge of this research is to write a pilot screenplay for a science fiction TV series about the subject of human enhancement.

As Skains (2018) and Boyd (2009) describe in their methodological proposals, there should be an initial research question that the writer-researcher is interested in exploring which is related to the creative challenge. This question will be revisited and might be refined or rephrased throughout the work.

In this study the initial question was - what is the creative process (creative decisions, considerations, challenges, conceptual framework) involved in writing a science fiction TV series about a morally, psychologically, philosophically and socially charged technological subject.

This question is dealing with a unique writing challenge, yet in itself it is relatively broad and comprehensive (though not dealing with the entire writing process – but defining an area of exploration within it: the “translation” of a technological and philosophical subject

matter into a TV series). It can be divided into several sub-questions, some of which were evident at the get-go and some unveiled throughout the writing process:

- Can a philosophical subject matter serve as an effective trigger to writing a screenplay?
- How can the study of the technology affect the writing process? What kind of a study of the technology should be done for the purpose of writing a screenplay?
- How should a science fiction writer treat and work on the representation of the technology in the screenplay? What dimensions of the technology should be explored and how? Which decisions and considerations should a science fiction writer exercise in relation to the technology?
- How can the study of the philosophy affect the writing process?
- How can a science fiction writer represent and dramatize philosophical ideas? How can philosophy be a source material to screenwriting?
- Should a writer make his own stand on the philosophical debate or should he/she represent the debate as it is?
- How well should a science fiction writer know the characteristics of the genre? How does the study and usage of genre conventions, concepts and theories contribute to the writing? Can the writing process help to evaluate, redefine or contribute to the theory in science fiction?

Method

The research method used draws from both Boyd and Skains and adheres to the conventions of creative writing research. It consists of the combination of practice (developing and writing a TV series concept and pilot screenplay) and deliberate steps and actions taken to elicit information or trigger experience in a way that will help expand knowledge in light of the research question. Those steps and actions include:

- Keeping a writing journal/open thoughts development journal (which by the end of the work was actually 5 different files – from different periods of the project – totaling at nearly 200 pages in Hebrew).

- Taking a Coursera class on writing a TV series pilot screenplay.
- Progressively reading and studying about human enhancement technology and philosophy.
- Writing a three-part article about human enhancement to an Israeli scientific website.
- Progressively reading and studying about science fiction theory and writing guidebooks and taking a TV science fiction writing webinar (by Peter Russell).
- Watching and analyzing several science fiction TV series and movies (the whole series or parts of it; The series were “Westworld”, “The 100”, “Akta Maniskor” + “Humans”, “Black Mirror”, “Limitless”, “Years and Years”, “The Leftovers”; The movies were “Limitless”, “Lucy”, “Elysium”, “Upgrade”, “Gattaca”)
- Reading science fiction books, novellas and stories – mainly those that deal with human enhancement (“Beggars in Spain”, “Odd John”, “Flowers for Algernon”, “Origin” by Dan Brown).
- Taking a number of consultations about the screenplay – two conversations with screenwriting theorist Erik Bork, one with Israeli screenwriter Eran Ben-Ya’akov, and one presentation of a version of the series synopsis at a writers’ group of the Israeli screenwriters’ guild.
- Ordering three screenplay coverages (two for the first version of the screenplay, and one for the next to last).
- Taking part each year in the SCRIPT Academy Sessions, University d’Evry Paris Saclay on the Experts of one’s research field, on Crisis, …
- Participating through SKY¨PE in a TTM (Trilingual Transmedia Master) seminar on Localization and Branching Storytelling with Jean-Luc Vettier (Zero Games), University of Evry
- Giving a lecture about science fiction storytelling theory at the SCRIPT ACADEMY (Prof. Brigitte Gauthier’s doctoral seminar), University of Evry Paris Saclay
- Having the screenplay read and receiving feedback at the SCRIPT ACADEMY.

Some of those actions were pre-planned (such as keeping a journal and studying about human enhancement and science fiction) and some were decided upon throughout the process in different phases. Even the pre-planned actions weren't completely systematic – reading and studying has been done in different phases, not knowing how the reading will contribute to writing, and some of the texts were revisited when it seemed right for the creative process.

The order in which this creative writing research has been conducted resembles the "action research" paradigm and Boyd's use of the "strange loops" analogy as a framework for creative writing research. This means that the factor leading the process is the development and the writing of the creative product, with its ups and downs. A "layer" of documentation and reflection has been added on top of the writing (for example: the writing journal), and throughout the writing there were decisions to take actions that were perceived as potentially helpful to the writing and to the simultaneous understanding of the writing process (for example: sending the screenplay drafts for professional coverage).

Section 3 of the dissertation ("The creative process") is written as chronologically as possible, following the development of the creative process and the development of the insights, decisions and considerations that emerged. The final structure of section 3 goes from the emergence of the idea, through writing a first and unsatisfactory draft, evaluating this draft, going back to ideation and conceiving of the story premise, and writing the second, more satisfactory draft. The reasons for deciding what is considered "unsatisfactory" and "satisfactory" are explained and produce the source to many of the insights and conclusions. Those reasons relate to the entertaining and artistic values of the screenplay, but also to the way the screenplay represents the subject matter of human enhancement and conveys the theme around it.

Conceptual approach in the research

Another question about the research method is what is the content of the exploration? what in the creative process is to be documented and researched?

The approach in this doctorate is influenced by Skains' emphasis on the cognitive process of creativity (also referring to Flower & Hayes, 1981). This emphasis directs the research to the following questions:

- What are the main creative decisions in the process?
- What are the considerations guiding those decisions?
- What are the main problems that had to be solved and how they were framed and handled?
- Which concepts of screenwriting and science fiction writing were used in the process? How did they contribute to the work? Have these concepts received new meaning or understanding, or turned out to have connections between them in the process?
- How did the writer conceptualize the creative challenge and how did this conceptualization grow?

Part 1 – Human enhancement

Science fiction is a genre which deals with technology (Russell, 2018). The artistic and storytelling meaning of this point will be detailed extensively in the parts of the thesis which focus on the conventions of science fiction and the creative writing process, but it is well worth mentioning this pillar of the genre to begin the chapter, which is dedicated to the technology underlying this specific creative endeavor. One statement needs to be made at this point, and it is that the author of science fiction must know his/her technology. The extent and characteristics of this "knowing" will be elaborated upon later.

The term of "Technology" is referred to here in a broad sense which entails not only the device or devices of a certain technological family, but also the purpose of the technology, its usage, economical echo-system, and its moral, social, psychological and political implications because there lies its dramatic potential. For example: A technology such as touch screen cellular phones is interesting for the science fiction writer with all its qualities, from the engineering to all the ways it impacts or could impact the human condition: inter-personal relationship, intra-personal experience, economy, governance and regulation etc. There is no question that cellular phones changed humanity, yet it might be a small and insignificant comma in human history compared to what the emergent technologies of human enhancement possibly have in store for us.

So, with a "what if" science fiction curiosity and a healthy interest in futuristic technology, this thesis will now begin exploring the complex concept of human enhancement.

1.1 What is human enhancement?

There are countless ways by which people try to make themselves better. Individual people work out, try to eat healthy, undertake psychological therapy, and take classes or training programs with the goal of expanding or improving their skills and performance level in all kinds of domains. Those domains are varied and can range from performing better in

physical appearance, as potential mating partners, in school, in sports, in arts, in business or any other wake of livelihood and even in morality and well-being.

As a collective, human societies devote considerable resources to the development of drugs, technologies and bio technologies that enable the entire humanity (or at least their own "clan") to perform better, live longer and healthier, experience higher standards of living and further continue the development of even more technologies which will solve more problems and better the humane state, according to acceptable social standards of what "better" means.

Can all of it be defined as "human enhancement"? If so, then almost every technology, from the hoe, which enables man to work his soil more effectively, eyeglasses that improve the sight of the short-sighted, jewelry or perfume, which makes us more attractive, to the cellular phone and the internet, which improve the speed by which we approach information, and prosthesis, which restore injured bodily functions, all of those can be considered human enhancement. In this case there is nothing much which is special, ethically challenging or "science fiction" about it. However, reviewing the above-mentioned list again might highlight one of the items: the prosthesis designed to repair flawed bodily functions. The concept of "Prosthesis" signifies both a tremendous advancement in medical technologies which occurred in the last decades, and a promise for future technologies made from a blend of real development reported in the media and the imagination of people.



Image 1.1: Oscar Pistorius uses prosthetic legs to run in the London 2012 Olympic games. The use of prosthesis was the focal point of the debate around Pistorius' participation in "regular" track competition. [2]

What could the future development of prosthesis body parts enable us? A cure for disabled people and for those who suffer from illness is already a common use in the present (prosthetic legs and arms, artificial hearts, pacemakers, brain implanted pacemakers that regulate neurotransmitter production in people who suffer from Parkinson's disease – Weaver et al., 2012 - and much more). But prosthetics does not stop there. Oscar Pistorius' artificial legs did not just help him function better in day-to-day life, they helped him run faster and become an Olympic athlete. Other prosthetic developments might start as medical aids but end up enabling healthy people to become "better" or "more", depending on their wishes. For example, two recent developments in brain prosthetic implants designed to help people who suffer from Alzheimer's disease, have demonstrated a 15 to 30 percent increase in memory functions that are not exclusive to people who suffer from Alzheimer's disease (Hampson et al., 2018; Ezzyat et al., 2018; Wang et al., 2018). The line that separates medical use from "human enhancement" has been a benchmark for defining "human enhancement", as suggested by Juengst (1998):

> "The term 'enhancement' is usually used in bioethics to characterize interventions designed to improve human form or functioning beyond what is necessary to sustain or restore good health." (p. 29)

Even without the support of scientific data our imagination can run and come up with visions of awesome uses for future prosthetics, like legs combined with jet engines that can help us hover and fly, eyes equipped with the ability to see through walls, hands so strong, fast and accurate that they can lift the car and change a flat tire in no time, and a stomach which will dissolve all the extra calories we consumed. Science fiction provided quite a few of those visions of prosthetic usage along the years, some of which have materialized, some of which are on the way.

[2] Picture taken by Will Clayton. Source: https://www.flickr.com/photos/spool32/7719453292; Retrieved on October 13, 2019



Image 1.2: "The six-million-dollar man" is an American TV series which aired between 1974-1978 and is about an astronaut by the name of Steve Austin, portrayed by Lee Majors, severely injured and restored with the extensive use of prosthetics. The restoration gave him super-powers which he used to fight crime. The series is based on the novel "Cyborg" by Martin Caidin (1972). Of course, a similar restoration today would probably cost a great deal more than six million dollars[3].

These kinds of technological possibilities move the discussion into two new areas: First, it opens possibilities for some "cool stuff", appealing for creators of science fiction who look for technologies they can use in stories to satisfy their readers' or audience's thirst for these kinds of novelties; And second, it raises a number of ethical issues, such as: Is it just to use advanced prosthetics beyond the relief of suffering? Where does "relief from suffering" end? What will be the consequences of having such technologies giving certain people an advantage over others? We can wonder what would happen if these technologies will be too expensive for most people, and therefore affordable only for a few? What is the obligation that someone with "enhanced abilities" carries for other members of society? These questions will be explored in later chapters.

The point to be made through the discussion about prosthetics is that the concept of human enhancement ranges from things we consider banal, like hoes, phones and perfumes, to much more advanced technologies, which captivate the science fictional imagination and raise ethical issues.

[3]*Source:*https://www.youtube.com/watch?v=bGO57y4td-c*; retrieved on October 13, 2019*

The true discussion about human enhancement relates to the latter end of the above, advanced technologies. It is logical to assume that technologies we now perceive as ordinary were once futuristic and differentiated people. A farmer who had a hoe must have had some sort of an advantage over his fellow farmer not in possession of this technology, who might have witnessed his colleague with amazement using this odd thing and getting things done much faster and more efficiently. However, two major characteristics make futuristic human enhancement technologies a whole different story:

i. They hold a promise to not only "complement" humane capabilities, as prior technologies did, but to intervene in the evolution of humane kind and create a person who is not confined to his biology or to the regular pace of natural selection.
ii. As opposed to prior technologies, whose distribution has been accelerated for economic reasons (for example – the phone), the validity of the same expanding mechanism could be in question when the technology which will promise superior capabilities will be available. The developers of phones wanted everyone to buy one. The inventor of the "superhuman" might possess a different desire which will be contrary to everybody becoming as powerful as him.

So, when we come to talk, discuss or write about human enhancement, we refer to the chunk of it that deals with biological, genetic, electronic or other non-natural and non-organic interventions or technologies which can improve the abilities of the human creature well beyond what it is currently capable of.

Several definitions have been offered for this concept. One of the most common of these has been proposed by James Hughes (2004):

> "[A]ny attempt to temporarily or permanently overcome the current limitations of the human body through natural or artificial means. It is the use of technological means to select or alter human characteristics and capacities, whether or not the alteration results in characteristics and capacities that lie beyond the existing human range"

1.2 Three types of human enhancement technologies

The current interventions and the research and development in the field of human enhancement revolves around three major categories:

i. Genetic interventions. This type of enhancement strategy includes ancient practices as the banning of interracial marriage and mating individuals with perceived higher genetic attributes, and newer phenomena like embryo selection, DNA editing and genetic therapy.

ii. Biochemical interventions. This type of enhancement refers to the usage of drugs and chemical substances for the improvement of human performance and abilities. The use of Anabolic Steroids to enhance athletic performance is one of the known phenomena in this category. A second common and growing "trend" is the consumption of "Nootropics", drugs that are presumed to enhance concentration and cognitive abilities.

iii. Man-Machine interconnectedness. The last major category of human enhancement technologies deals with connecting machines and their current and speculated advantages over the human body to people, creating what is usually referred to as "Cyborgs". This category can be quite wide, covering all kinds of present and future prosthetics, tDCS technology, brain implants, and in the future even the complete merging of mind and computer.

1.2.1 Genetic enhancement

On July 1933 the German Nazi government enacted the law for the prevention of hereditarily diseased offspring, which allowed the forced sterilization of anyone carrying a supposedly hereditary disease (Proctor, 1988). This was the first among several eugenic laws and projects enacted by the Nazis, incorporating a rigorous approach to public health and, of course, a desire for an ideal Aryan society created by genetics and designed reproduction. In September 1935 the Nuremberg laws were enacted as well, including the law for the protection of German blood and honor, which restricted, among other articles, marriage between Jews and citizens of the German Reich (Freidlander, 2009; Evans, 2005).

Although it is highly questionable whether these laws can be framed as “human enhancement”, it is certainly a clear example of a society trying to design its genetic characteristics based on the perception that some genetic attributes are superior to others. Yet there is another Nazi project which can certainly qualify as a “human enhancement” endeavor of the genetic category: the Lebensborn project.

The Lebensborn project was established in December 1935 (Albanese, 2006) under the oversight of Heinrich Himmler and focused on mating high German officials and other Arian men who signified the best of the German genetics, with carefully selected German women. The purpose of the project was to increase birth rates but also to “produce” children of higher genetic features who might serve as future leaders of Germany. In a memo to the members of the SS, Himmler described the goals of the project:

> “The organization "Lebensborn e.V." serves the SS leaders in the selection and adoption of qualified children. The organization "Lebensborn e.V." is under my personal direction, is part of the Race and Settlement Central Bureau of the SS, and has the following obligations:
>
> 1. Support racially, biologically and hereditarily valuable families with many children.
>
> 2. Placement and care of racially, biologically and hereditarily valuable pregnant women, who, after thorough examination of their and the progenitor's families by the Race and Settlement Central Bureau of the SS, can be expected to produce equally valuable children.
>
> 3. Care for the children.
>
> 4. Care for the children's mothers.
>
> It is the honorable duty of all leaders of the central bureau to become members of the organisation "Lebensborn e.V.". The application for admission must be filed prior to 23 September 1936.” (Barret & Jackson,2011)



Image 1.3: Joe Blake, a major character in the series "The Man in the High Castle", is a Lebensborn. The series, based on a Philip K. Dick novella by that name, takes place in an alternative history world where the Germans and the Japanese won WW2 and control North America, with some individuals capable of travelling between parallel worlds. The series aired in 2015 on Amazon Prime and is still running. Joe Blake, portrayed by Luke Kleintank, is the son of a Nazi minister and a selected genetically Arian American mother, and was raised to become a secret service assassin and a future leader. [4]

As can be learned from the Lebensborn project, there is a precedent to a state initiative to influence and enhance the genetic distribution of the population. However, "designing babies" is a phenomenon which occurs and even grows in the liberal, capitalistic free choice and free market culture. One of the most prominent examples of that is the growing market of "high value" sperm donors.

An article by Jenny Johnston and Jill Foster in the British Daily Mail[5] describes a growing demand for Danish sperm donors, responsible for thousands of children created through In Vitro Fertilization (IVF), especially among single women and same sex couples

[4] Source: https://the-man-in-the-high-castle.fandom.com/wiki/Joe_Blake; Retrieved on October 13, 2019.
[5] Source: https://www.dailymail.co.uk/femail/article-6160549/As-women-turn-Danish-sperm-donors-intriguing-reasons-Britains-Viking-baby-boom.html; Published on September 12, 2018. Retrieved October 14, 2019.

(heterosexual couples usually prefer donors who resemble the husband's traits). The large demand for "Viking" sperm donors reflects trait preferences women want for their babies, mainly tall, blond and healthy. Another study, carried out in Australia by Whyte et al. (2016), showed a preference for donors with proven higher education and with calm character. Even though the traits might change between cultures, the principle remains the same: when people are faced with the personal choice of using a sperm donor to bring a child to the world, they seek to "equip" the unborn with the best genetic starting point they can get according to their own judgement and personal model for genetic excellence. A morally dubious initiative related to sperm donation was the "Repository for Germinal Choice", a sperm bank founded in 1979 by a businessman called Robert Clark Graham. His sperm bank wanted to produce highly intelligent children and was proud to offer the sperm of Nobel prize winners, giving it the nickname "The Nobel Prize Sperm Bank"[6]. The initiative did not last, partly due to immense public criticism as it was deemed racist. Yet the story provides another chapter in the story of the human relationship with enhancement through genetics.

Another type of genetic enhancement available today is embryo selection. Some of the more well-known cases of embryo selection which are not based on health issues (which in itself is a morally debatable issue) are the predominant preference for male babies under the Chinese birth control laws or a similar preference in other cultures or socio-economic environments, where male children are considered either a better financial resource for the family or of higher value religiously or culturally. However, this does not really count as human enhancement in the way this dissertation perceives it since there is no attempt to change the abilities or the performance of the human creature.

A borderline but concise example for embryo selection as a "human enhancement" practice is the case of terminating Down syndrome pregnancies, which is now estimated to be the case in 90% or more of pregnancies in the western world (Morris, 2012). Humanity is practically on the verge of eradicating Down syndrome by preventing children with this condition and some other major deformations to be born.

[6] Source: https://slate.com/human-interest/2001/02/the-myths-of-the-nobel-sperm-bank.html; Published on February 23, 2001. Retrieved on October 14, 2019.

There is one factor or technological ability that will "push" embryo selection into being true human enhancement, and this is the ability to diagnose the genetic value of early stage embryos. If we had the ability to determine if a fertilized egg has the potential to grow into a person with desired traits, such as high intelligence and good looks, health and longevity amongst others, and based on that diagnosis we were able to select which fertilized egg to use in pregnancy, we would be taking part in "bettering" our own offspring. Making such a practice widespread will have a huge effect over societies and perhaps the entire of mankind. As it happens, this kind of technology, which can diagnose the prospective traits of embryos, does exist. Genetic Engineering uses the concept of polygenic score, a statistical model to evaluate and predict the development of traits based on a specific genotype, in developing genetically engineered plants (for example: Chen et al., 2014).

Several studies began to show that a polygenic score can be used to predict different human traits based on DNA. A study done jointly in Croatia and Scotland by Spiliopoulou et al. (2015) showed the ability to predict subjects' height and weight (BMI) by their DNA. Vassos et al. (2016) showed a correlation between DNA and psychosis. Selzam et al. (2016) and Okbay, Beauchamp & Benjamin (2016) showed that a polygenic score (analysis of DNA) can predict achievements in education at a correlation of r=.3, which is not too far from the predictive ability of intelligence test scores. Those studies and others practically imply that we can biopsy a sample from the DNA of a fertilized egg, have the sample tested with a pre-implantation genetic diagnosis (PGD) and predict with some degree of accuracy the height, weight, tendency for mental illness, and potential academic achievement (and some other traits as well) of the person who will grow from this embryo. The studies are based on statistical probabilities, which means the polygenic score cannot promise the anxious mother who sends her fertilized eggs to be inspected that her child will demonstrate all those traits, but the chances that he/she will do so are greater. When thinking of it as a potential social practice (and if my neighbor had "embryo selected" her kid, why shouldn't I) the consequences might change some distribution curves dramatically, the way it changed the Down syndrome statistics.

Shulman and Bostrom (2014) have calculated that since every IQ point equals a 1% increase in income, it is economically profitable nowadays for expecting parents to invest

in having the wife's eggs extracted, fertilized, and evaluated and then to continue with the IVF process, starting with the embryo with the highest polygenic score for intelligence. This process keeps the relatedness between the offspring and the parents since it is their child and not something done with donors or through a fascist model such as Lebensborn. Shulman and Bostrom (2014), however, recognize that this predictive model will collapse if many people do the same, because with more intelligent people in the world the income variance might change. Yet by another perspective one could argue that having more intelligent people could be positive for human society, but that is something considered in the chapter dedicated to the moral and social issues of human enhancement.

The next step in the journey of genetic human enhancement is "Designer Babies": the ability to modify and even shape a future child's genetics to have him/her possess genetic qualities chosen through a decision made by the parents or anyone being in the position to make and execute such a decision.

There are two things people need to know in order to genetically modify any kind of organism: the first is knowing the genetic architecture of the organism, mapping out the relations between the DNA structure and the organism traits (like what Selzam et al., 2016, and Okbay et al., 2016, explore in their research); the second thing to know is how to manipulate or edit the DNA so it is possible to modify it by design. Once you hone those two knowledge components you can genetically engineer what you want. Science has employed this model in countless genetical engineering projects, like the creation of the flavr savr tomato, which does not rot for a long time as the gene that controls the rotting process has been changed (Redenbaugh et al., 1992), and many more. The huge advancements in human genome mapping contribute to the first component, and the rapid development of CRISPR gene editing through genetically engineered germs make this scenario seem more and more possible (Zhang, Wen & Guo, 2014).

Research which can indicate where things could go is the "doogie mice" study (Tang et al., 1999). The research, conducted at several American universities, modified mice DNA so their brain will activate more and faster a synaptic receptor called NMDA (N-methyl-D-as partate), which is related to the formation and retrieval of memories and signal detection. The result was mice with much better ability to learn mazes, remember environments, and

use memories in future connotations. In other words – super smart mice. Their nickname – "doogie mice" – was given to them after Doogie Howser, a TV character of a 13-year-old medical doctor.

Mice is one thing, but can gene editing take part in creating human children? In late 2018 a Chinese doctor, He Jiankui, was reported[7] to have "designed" and delivered twin babies whose genes had been modified in a way he claims will protect them from HIV. He did not publish the case in an article nor make his data transparent, contributing to the oddity of the case (adding to the question of why, of all genes, change the gene that is responsible for HIV). His media appearances have caused a huge criticism from the medical fertility and the genetic research communities for its ethical boundary crossing. Julian Savulescu, the director of the Oxford Uehiro for Practical Ethics (and a prominent advocate in favor of human enhancement, whose work on the subject will be discussed later) have commented about Jiankui's report to the British Evening Standard:

> "If true, this experiment is monstrous. It exposes healthy children to risks of gene editing for no real necessary benefit. These healthy babies are being used as guinea pigs. This is genetic Russian roulette".8

The criticism did not rule out the feasibility of the procedure, estimating it as unsafe yet at the same time insinuating its plausibility. It is the first reported case of using CRISPR (or any other genetic editing technology) to create a genetically designed human being. Another border had been crossed.

What does the future hold for genetically designed reproduction? Michio Kaku, a Physicist and a Futurist, estimated in his book, "*Physics of the Future*", that the technological ability to design the entire genetic portfolio of an unborn child will exist sometime around the middle of this century (Kaku, 2011). He portrays a future in which parents will be able to, at a very low cost, decide the height, appearance, intelligence, character, athletic ability, color of skin, eyes and hair and maybe even much more. In a more distant future, humanity could even begin to make more radical changes in human features, creating children who

[7] Source: https://www.statnews.com/2018/12/17/crispr-shocker-genome-editing-scientist-he-jiankui/; Published on December 17, 2018. Retrieved on October 14, 2019.
[8] Source: https://www.standard.co.uk/news/world/chinese-scientist-he-jiankui-reveals-another-woman-pregnant-with-genetically-edited-baby-a4002286.html. Retrieved on October 13, 2019.

could grow to stand extreme conditions such as lack of oxygen, lack of food, and severe higher or lower temperatures, like those expected in other planets to which men will need to travel if ever earth is in danger. Humans have genetically acclimated vegetation and animals, so why not ourselves.

A radical potential use of CRISPR gene editing technology, which makes gene editing easier, faster, and considerably cheaper than before, is not just in changing the DNA of the unborn, but in changing it for living people.

1989 was the year in which a significant medical breakthrough was achieved. For the first time it was proven that it is possible to insert genetic substance into human cells and modify the cells' DNA for therapeutic intentions (Rosenberg et al., 1990). That study preceded the development of CRISPR, and now with better gene editing options the use of Gene Therapy is constantly developing and holds a great promise for the future. Michio Kaku gives evidence for future breakthroughs in the use of Gene Therapy that will help overcome Alzheimer's and Parkinson's disease, diabetes, and even cancer.

As with many of the technologies described in this chapter and the ones to follow, what starts as medical breakthroughs ignites thoughts of "less-medical" uses where there are other human needs or aspirations.

The direction to which CRISPR technology might be pointing can be implied in the story of Josia Zayner. Zayner is a biophysicist and a former NASA employee who owns a company manufacturing and selling do-it-yourself CRISPR kits, a business that he established through crowd-funding. Zayner is a prominent "Biohacker", a term used to include people who try to implement scientific knowledge to create new ways to influence their own bodies, health, brain etc. and optimize their biological function. Zayner, in what might be interpreted as a commercial stunt, self-injected a CRISPR synthesized DNA to inhibit the gene responsible for the production of myostatin, a hormone which regulates muscle development. Zayner tried to copy a famous genetic modification experiment, in which mice had been genetically modified to inhibit the production of myostatin so that their muscles grew very fast. Other evidence for the impact of the lack of myostatin was found in a German toddler whose muscles grew rapidly and his body, due to a genetic mutation in the very same Myostatin inhibiting gene, had no Myostatin at all (Schuelke et

al., 2004). In short, Zayner wanted to "hack" his body to grow big muscles using a CRISPR generated genetic substance that would change hormone production (Zayner's story is told in numerous internet articles[9]).



Image 1.4: Josiah Zayner documented his actions in YouTube videos, like this one titled: "How to Genetically Engineer a Human in your Garage". [10]

Zayner's muscles did not grow[11]. He claimed he had self-injected too small a dosage for that purpose. However, this thesis is not about scientific accuracy but about the creation of science fiction, and so the interest moves from what actually exists to what could be, in different degrees of plausibility. The current part of the thesis is the exploration of the science which will support the fiction and is the basis for my decisions as a writer of how to shape and nuance the scientific/technological pillar of the fiction. The creative decisions themselves will be discussed in the last part of the thesis. Josia Zayner is one of those providing a vision for the development of a do-it-yourself bioscience. He even encourages people to use his kits and try CRISPR outside the domination of the drug companies, with the goal of achieving what he calls "Genomic Freedom":

[9] Source: https://www.buzzfeednews.com/article/stephaniemlee/this-biohacker-wants-to-edit-his-own-dna; Published on October 14, 2017. Retrieved October 13, 2019.
[10] Source: https://www.youtube.com/watch?v=imTXcEh79lw; Published on February 15, 2017. Retrieved on October 13, 2019.
[11] Source: https://biohackinfo.com/news-biohacker-josiah-zayner-injected-crispr-muscles-retaliates-against-scientists/; Published on November 15, 2018. Retrieved on October 14, 2019.

> "I think we're approaching a time when we do not have to be stuck with the genes we were born with."[12]

Genetic Enhancement is a work in progress, but considerable progress has been made already, and the models to push it further along already exist. A good way to conclude this specific chapter can be found in the words of the well-known biologist, Edward Osborn Wilson:

> "We have decommissioned natural selection and must now look deep within ourselves and decide what we wish to become" (taken from "Physics of the Future", Michio Kaku, p. 141-142 of the Hebrew edition).

Exciting. Mind blowing. Frightening. A great place to create science fiction from.

1.2.2 Biochemical enhancement

In the 2011 American movie "Limitless", the hero, a young and unsuccessful author called Eddie Morra, gets hold of a pill called NZT-48, which gives him superior mental capabilities. While on the drug, Eddie manages to complete his novel in no time and, with the praise of his publisher, invests in the stock market and gets amazing returns, learns Chinese, and manages to reverse engineer the drug to have a long-term supply. His thinking becomes sharp and fast, he can recall everything he ever learned or heard, and his ability to understand and manipulate people increases (except for when they use the drug as well, like his antagonist and his girlfriend).

[12] Source: https://www.youtube.com/watch?v=S2dhb-xQMTs; Published on January 6, 2018. Retrieved on October 13, 2019.

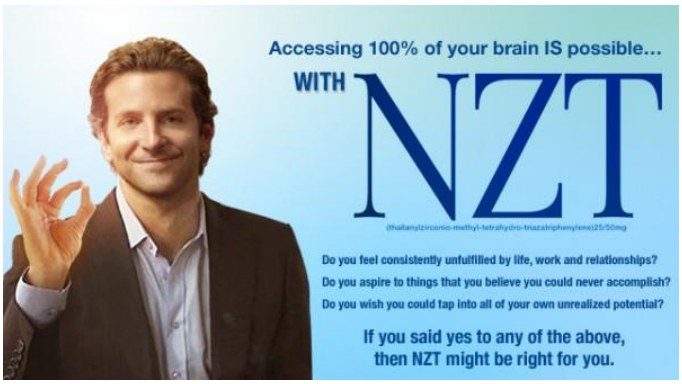


Image 1.5: The marketing strategy for the movie "Limitless" included a fake advertisement campaign for the NZT drug with actor Bradley Cooper, who plays the lead character Eddie Morra. [13]

A pill with the same powerful effect of the fictional NZT-48 does not exist but in the last decades there has been a leap in the field of psychoactive drugs. The notion that consuming substances can alter the temporary or the long-term function of the brain is not new, of course, but the human ability to control and design its impact for targeted purposes is something that started to happen seriously in the second half of the 20th century and has progressed significantly and become common in the last 20-30 years.

Most of the progress has occurred in the treatment of Psychiatric and Neurological illness, such as depression (Prozac), schizophrenia (Haldol), Parkinson's disease (Levodopa) and others. Most of these drugs operate by regulating – inhibiting or enhancing – the levels of certain neurotransmitters in the brain, the chemicals that allow electrical transmission between synapses. More of these neurotransmitters or less of them means either more activation of linked synapses or the blocking of their activation, depending on the desired impact (Lopez et al., 2008; Jann et al., 1985).

All these drugs were created specifically to address the treatment of medical conditions. However, the boundaries of what counts as a medical pathology and what is a discomfort at one degree or another, has blurred along the years. The widespread and unprescribed use of several prescription drugs, like Prozac, has led to the emergence of a black market for

[13] Source: https://collider.com/bradley-cooper-limitless-viral/; Published on December 9, 2010. Retrieved on October 13, 2019

acquiring them[14]. When technologies originally meant to cure medical problems start to serve in helping people with problems or needs that are within the non-pathological areas, that is the first indication of entering enhancement "territory". When people take Prozac or Celexa to reduce stress levels before an important or professionally demanding event, with the goal of performing better, it is well within the boundaries of human enhancement.

Ritalin (Methylphenidate), a stimulant that proved to have an effective impact on people who suffer from attention deficit hyperactive disorder (ADHD; Lange et al., 2010), is one of those drugs which is heavily used by people trying to achieve better attention and focus. Ritalin has become popular with students and people who work at high pressure jobs, with a black-market trade for those who could not get it from their doctor. Unlike the previously mentioned drugs, Ritalin and his "unidentical twin", Concerta, is specifically intended to enhance cognitive abilities and performance level.

Ritalin and Concerta are among a group of substances which was given the name "Nootropics" (Giurgea, 1972). The nootropics (also referred to as "smart drugs" or "cognitive enhancers") are drugs, supplements, and other substances that may improve cognitive function, particularly executive functions, memory, creativity, or motivation, in healthy individuals (Frati et al., 2015).

The "queen" of the nootropics as for now is considered to be the Modafinil. Some have even claimed it is the closest thing in reality to the "Limitless" NZT. Modafinil is a drug developed to treat sleepiness caused by narcolepsy or sleep disorder caused by working in shifts (Fuxe et al., 1996). However, it has demonstrated the potential to enhance energy levels, concentration, and other cognitive abilities (Battleday & Brem, 2015) and became increasingly popular with students, replacing the Ritalin as a "go-to drug" for high performance[15]. Its popularity grew when Dave Asprey, a famous biohacker, senior executive, and management consultant published his personal experience with the drug, describing it as a "Viagra for the brain" and said:

[14] Source: https://www.mirror.co.uk/news/uk-news/stressed-depressed-students-turning-dark-11184813; Published on September 16, 2017. Retrieved on October 14, 2019.
[15] Source: https://www.dailymail.co.uk/femail/article-5966497/Students-admit-use-smart-drug-help-concentrate.html; Published on July 19, 2018. Retrieved on October 14, 2019.

> "This could make the difference between I'm just making it through the day and, like, I'm having the best day of my life".[16]

It is reported in the same news story to be used as a secret stimulant by professional athletes, professional poker players, military pilots, students, top executives, and others. Fronda et al. (2018), claim the usage of Modafinil and other known enhancement drugs have become so widespread in highly competitive professions, such as high-level management and stockbrokers, that it is time to begin an ethical discussion about it.

The empirical evidence about its effectiveness is not conclusive and it is not fully understood why or how it works (Battleday & Brem, 2015), yet some studies did show that Modafinil has the effect of enhancing performance in assignments that require accuracy and decision making over consecutive time periods, such as for nurses and surgeons (Sugden et al., 2012).

The nootropic market includes a variety of products, with some that are prescription drugs used outside their original intent, some supplements (like the popular Racetam and Piracetam) and others are "stacks" blending different components. Even caffeine is considered a nootropic by some and can be found in some "stacks". There is very little empirical research on the real effects of nootropics and much of the data published about it is through advertisements of manufacturers and selling entities. The biohacking community is infatuated with the promise of nootropics and keeps self-testing it, trying to find the "optimal stack" (which apparently is personalized and changes from person to person) to "hack the brain" and help it to operate more efficiently, being more energetic, focused, creative, organized, and so on[17].

A completely different case of human enhancement through biochemistry is the use of performance enhancing drugs in sports. There are several categories of substances that professional athletes use and are considered by sport authorities to be illegal as they create an unfair advantage. There are anabolic steroids that enable the body to recover quickly

[16] Source: https://www.youtube.com/watch?v=PAKS0aVhGto; Uploaded on July 17, 2012. Retrieved on October 13, 2019.
[17] Source: https://www.vox.com/the-goods/2019/7/8/18772467/nootropics-silicon-valley-brain-fitness-goop-smart-drugs; Published on July 8, 2019. Retrieved on October 14, 2019.

from intensive training and raise the intensity and frequency of training, which results in a steep rise of athletic performance[18].There is also a use of stimulants which enable the athlete to display higher performance levels and energy (Avois et al, 2006). The most known cases of these uses are of course the sprinter Ben Johnson who set world records and won world and Olympic gold medals in the 100 meters dash. the East German sports system has evidently been using performance enhancing drugs systematically (Dimeo, Hunt & Horbury, 2011); There are many world records lasting from the 1980's which are suspected to be achieved with the use of performance enhancement drugs: the East German Marita Koch whose1985 world record in the 400 meters run has not been threatened yet (47.60 seconds; the gold medal winner of the Rio 2016 Olympics, Shauna Miller from the Bahamas, ran the distance in 49.44 seconds, nearly 2 seconds slower than Koch did 31 years earlier); The American Sprinter Florence Griffith Joyner smashed the world records in the 100- and 200-meters race in the 1988 Seoul games, two records that athletes have not come close to breaking since. Griffith Joyner passed away 10 years afterwards at the age of 38 from a sever epileptic seizure, with many people assuming the seizures she had been having were a result of an extensive use of steroids[19]. Another long-lasting record is the 800 meters world record from 1983 set by the Czech Jarmila Kratochvilova: 1:53.28 minutes. Kratochvilova, who is also the only runner other than Koch to run the 400 in under 48 seconds, never admitted using performance enhancing drugs, and when discussions about cancelling the 1980's records were held she objected to that, saying she trained hard and took plenty of vitamin B12 supplements[20].

Another usage, less documented and not officially banned, is the use of the Human Growth Hormone (HGH) by young basketball players who wish to increase their height. Michael Jordan, who is still by consensus the greatest basketball player of all time, had a late growth spurt and was reported to grow from 5"11 ft (180cm) at 16 years old to 6"6 ft (198cm) at 18 years old[21]. Although not proven, there are rumors that this growth spurt was the result

[18]Source: https://www.health.ny.gov/publications/1210/; Retrieved on October 14, 2019.
[19] Source: https://www.salon.com/1998/12/04/cov_04newsa/. Published on December 5, 1998. Retrieved on October 14, 2019.
[20] Source: https://www.nytimes.com/2017/06/15/sports/olympics/jarmila-kratochvilova-800-meters-record.html; Published on June 15, 2017. Retrieved on October 14, 2019.
[21] Source: https://www.youtube.com/watch?v=eCOEMUB-niY; Uploaded on January 29, 2014. Retrieved on October 14, 2019.

of the use of HGH[22]. It is safe to assume that in the extremely competitive basketball world, in which the odds of reaching the highest professional levels are slim, aspiring players will be motivated to examine all kinds of avenues to achieve a competitive edge and be driven to use substances such as HGH and stimulants.

Biochemistry has already proven itself as an enhancement technology in increasing athletic performance and growing taller. It is also proven to help brain related problems such as mental health issues and attention deficits. Although the empirical evidence is dubious, many people swear that "smart drugs" significantly boost their focus, alertness, creativity, and other cognitive abilities. Differently from Genetic Engineering it is not completely clear where biochemical human enhancement will go to next. One scenario is that it will develop slowly, in small steps, with a slightly better version of Modafinil and maybe a safer version of HGH. Another scenario is that there will be a leap that cannot be foreseen now. Futurists like Ray Kurzweil, Michio Kaku, Roey Tzezana (2011) and others do not relate to biochemical enhancement as much as they relate to Genetic or Man-Machine enhancement (which will be discussed in the next chapter), probably since it is not fully understood how biochemistry, especially in the brain, operates and changes behaviors and moreover – traits. It is, however, something which can be explored in science fiction and philosophy, as it has been done in "Limitless" (which has also been adapted into a TV series) and in the highly successful Luc Besson film "Lucy".



Image 1.7: "Lucy" is a French American science fiction thriller by director Luc Besson, starring Scarlet Johansson. The protagonist, Lucy, is a simple girl forced to swallow and deliver a new drug. The drug capsules tear in her stomach and turn out to be an extremely effective "smart drug". Lucy, with new and

[22] Source: https://forums.somethingawful.com/showthread.php?threadid=3547828; Retrieved on October 14, 2019.

astonishing cognitive and sensor-motor capabilities, sets off to defeat the bad guys and achieve cosmic insights about the world. The movie grossed over 460 million dollars[23].

When trying to imagine the potential of biochemical enhancement as a source of stories, different possibilities emerge: that drugs can be used to alter moral behavior, extinguish anti-social desires and attitudes like the anti-homosexual biochemical treatment of the 1950's or maybe even just make sad people happy. When man wants to change himself, biochemistry does and probably will take part.

1.2.3 Enhancement through man-machine interconnection

The thesis up to this point has set out the boundaries of what counts as human enhancement for this work's purposes beyond the use of smart phones. Smart phones are modern shovels, extending the efficiency and action possibilities of people but not changing their basic "hardware" (some might argue with that). But what if the shovel would have been attached and folded inside our arms, ready to pop out at will to do the work? What if smart phones and smart glasses will be placed on our retina, or even more – implanted into our brains - giving us the ability to access every piece of information or calculation we want instantly within our mind? This move from "wearables" to "implantables" is the continuation of the prosthetics example from the beginning of the chapter. It is now perceived as one of the keys to the development of human enhancement technologies.

Most of what there is to say about human enhancement through man-machine connection is prospective and belongs to entrepreneurs, futurists and science fiction more than it is anchored in current technologies and practices. Still, there is a realistic base for the predictions, ongoing research and development initiatives, and even some present reality.

An existing technology that shows a potential to enhance human abilities via a man-machine interface is transcranial direct-current stimulation (tDCS). tDCS is basically a non-invasive electric stimulation of the brain meant to improve performance and make

[23] Source: https://variety.com/2014/film/reviews/film-review-lucy-1201267405/; Published on July 23, 2014. Retrieved on October 14, 2019.

learning faster. The use of electric stimulation of the brain has been long known, and for a long period of time even notoriously known, for treating chronic depression. Actually, this line of treatment has proven to be one of the most effective treatments for depression, maybe even the most effective one, especially with treatment-resistant depression patients (Delaloye & Holtzheimer, 2014). The same procedure of deep brain stimulation has also shown positive results in studies in restraining severe aggressive tendencies and behaviors in patients whose aggression did not respond to conservative treatments (Harat et al., 2015). It becomes clearer and clearer that electric stimulation of the brain has an impact on brain activity.

Studies have shown that tDCS enhances skill learning success considerably (Clark et al., 2012). Another study showed improved learning in mathematics in subjects using tDCS while learning, an advantage that lasted six months after the experiment (Snowball et al., 2013). The American Defense Advanced Research Projects agency (DARPA) has been actively testing and developing tDCS technology for the improvement of soldiers' cognitive function in combat and improving training effectiveness (Kraus et al., 2017). The scientific journalist Sally Adee published in 2012 an article called "Zap your brain into the zone: Fast track to pure focus"[24], where she describes her experience with a tDCS device in the laboratory of Dr. Michael Weisend, one of the researchers involved in the DARPA project. In the lab she played at a combat simulator game twice. The first time she did not wear tDCS electrodes, and performed poorly:

> "I'm close to tears behind my thin cover of sandbags as 20 screaming, masked men run towards me at full speed, strapped into suicide bomb vests and clutching rifles. For everyone I manage to shoot dead, three new assailants pop up from nowhere. I'm clearly not shooting fast enough, and panic and incompetence are making me continually jam my rifle."

In the second attempt she did wear the tDCS electrodes:

> "Initially, there is a slight tingle, and suddenly my mouth tastes like I've just licked the inside of an aluminum can. I do not notice any other effect.

[24] Source: https://www.newscientist.com/article/mg21328501-600-zap-your-brain-into-the-zone-fast-track-to-pure-focus/; Published on February 1, 2012. Retrieved on October 14, 2019.

> I simply begin to take out attacker after attacker. As twenty of them run at me brandishing their guns, I calmly line up my rifle, take a moment to breathe deeply, and pick off the closest one, before tranquilly assessing my next target. In what seems like next to no time, I hear a voice call out, "Okay, that's it." The lights come up in the simulation room and one of the assistants at Advanced Brain Monitoring, a young woman just out of university, tentatively enters the darkened room. In the sudden quiet amid the bodies around me, I was really expecting more assailants, and I'm a bit disappointed when the team begins to remove my electrodes. I look up and wonder if someone wound the clocks forward. Inexplicably, 20 minutes have just passed. "How many did I get?" I ask the assistant. She looks at me quizzically. "All of them."

The news about tDCS has caught public attention and it did not take long for some companies to develop and start marketing tDCS products, such as “Halo Neuroscience”, which developed brain stimulating headphones that they claim significantly enhance training outcomes in sports and in music, having prestigious clientele such as the NBA champions the Golden State Warriors and the US national ski team, and displaying impressive data on their website. Other companies target gamers who wish to perform better in video games.

Since brain implantable pacemakers are already in use for diseases like Parkinson’s and in helping restore memory deficits in people who suffer from Alzheimer’s, the notion of an implantable tDCS machine that sends currents from inside the brain at will to get into a cognitive state that boosts performance and learning, does not appear to be that far away.

We mentioned DARPA as a major player in the tDCS development business. The same organization is also in advanced development of the TALOS (tactical assault light operator suit), a wearable robotic exoskeleton designed to serve as combat uniform that protects the soldier, helps him to move faster and effortlessly carry big weights. The suit is also equipped with sight enhancement aids and tDCS electrodes that improve the soldiers’ vision and concentration. We’re talking about an Ironman suit. Current estimation is for the suit to be operational in 2021.



Image 1.8: A drawing of the TALOS developed by DARPA. The suit and its features highly resemble the combat suits displayed in the 2014 science fiction movie – "Edge of Tomorrow".[25]

When thinking of things such as tDCS, and combining them with technologies reviewed earlier, a thought about the current possibilities of human enhancement emerges: If someone wants to bring a child with the most chances to succeed in… whatever (this is, of course, a question on its own), but let us say that he wants his child to have the best chances to be highly intelligent, good at sports and so on, there is a path he can take. The path can begin with finding the partner with the best genes possible (via donners' systems, or in the old fashioned "romantic" way), create several embryos, have them assessed to establish their genomic score, then raise the "best" fertilized egg and teach the child when growing up with the help of a tDCS device. It is the modern and much more scientifically valid version of the "baby Mozart" frenzy that occurred in the 1990's when a so-called research (that did not really happen) claimed that playing Mozart for the fetus during pregnancy will boost the IQ of the future child[26]. Many parents made distributers of "baby Mozart" tapes quite wealthy (because it is only a few dollars, and, well, you never know).

[25] Source: https://www.nextbigfuture.com/2018/11/talos-special-ops-exoskeleton-today-and-plans-for-exoskeleton-divisions-in-2030s.html; Published on November 5, 2018. Retrieved on October 14, 2019.
[26] Source: https://qz.com/628331/the-idea-that-mozart-makes-babies-smarter-is-one-of-parentings-most-bizarre-myths/; Published on March 2, 2016. Retrieved on October 14, 2019.

The process of creating a "super-kid" is a very expensive one, and one which demands a great deal of dedication. Who could say if there are no rich people out there trying to achieve such a thing.

Still in reality, the biohacking community has a say in man-machine enhancement as well. Moon Ribas is a Spanish dancer and avant-guard artist who planted a transmitter connected to a world-wide system of seismographs in her elbow, making her feel whenever a seismograph detects an earthquake somewhere in the world[27]. She is described in the media as "The world's first cyborg artist". This is with no doubt an original form of human enhancement; however, it is human enhancement, done by implanting a machine, connected to other machines, into the human body. Another biohacker, Liviu Babitz, who is the CEO and co-founder of a company called "Cyborg Nest", has implanted in himself a magnet that can sense the electromagnetic field. In other words – he can sense the north (unless there is a competing electromagnetic force in his proximity). He, and others who followed him, have artificially given themselves new senses[28].

Yet, the real story of enhancement through man-machine merger is something which belongs to the future, perhaps not the very far future.

Elon Musk is a very well-known technological entrepreneur, a modern Howard Hughes and even more than that, considered a sort of Guru and visionary of future technologies. He established numerous companies, such as the online payment service, PayPal, Tesla, which builds hybrid and electrical cars, SpaceX, which develops rockets for space travel, and he plans to settle Mars sometime in the next 20 years. In 2016 Musk started the company "Neuralink". At the time of writing this thesis, Neuralink's website contains only a call for candidates, which begins with these words[29]:

> "Neuralink is developing ultra-high bandwidth brain-machine interfaces to connect humans and computers."

[27] Source: http://www.hopesandfears.com/hopes/future/technology/216729-the-woman-who-can-feel-every-earthquake-in-the-world.html; Published on October 17, 2015. Retrieved on October 14, 2019.
[28] Source: https://www.theguardian.com/technology/2017/jan/06/first-humans-sense-where-north-is-cyborg-gadget; Published on January 6, 2017. Retrieved on October 14, 2019.
[29] Source: https://neuralink.com/; Retrieved on January 7, 2019.

Based on rumors and statements Musk has given in interviews, Neuralink seems to target 3 goals: the first is to create transplants for medical use, which will help people with cognitive damage; the second is to enable communication between people without the use of any external device, which actually means telepathy; the third, and the most ambitious one (if it is possible to be more ambitious than enabling telepathy) is to connect people to the Internet and to computers, merging the human brain and cognition with all the assets that computers can provide, including the prospect of growing in Artificial Intelligence technology. Elon Musk explained the reason for starting Neuralink in an interview:

> "The reason I want to create Neuralink was primarily as an opposite to the existential risk associated with artificial Intelligence... We will not be able to beat AI, you know we cannot beat them join them kind of thing... having AI as an extension of human will". 30

So, Elon Musk predicts that humans will not stand a chance against Artificial Intelligence and to prepare ourselves for this scenario we should technologically develop ourselves. This is a prelude to the next chapter that deals with the moral debate regarding human enhancement, but also provides an insight into Musk's vision which he actively promotes: people could use implants to connect themselves with the vast amounts of knowledge and computation powers that AI can provide, and become part of AI, making computers work for and with humans and not against them.

The technology behind Neuralink is currently unknown. Some rumors suggest it is based on something called "Neural Lace" or "Neural Dust" - plenty of tiny electrodes and cheeps scattered in the brain, connected between themselves and with outside networks[31]. The "Lace/Dust" will be able to monitor the brain activity and communicate with the conscious mind.

Some of Musk's ventures were very successful and drove the technologies of their fields a few steps forward, while others seem to lag behind and not fulfill their promises. To which of these groups will Neuralink belong? Considering we live in a time when people already

[30] Source: https://www.youtube.com/watch?v=OFe-gdEc824; Uploaded on March 6, 2018. Retrieved on October 14, 2019.
[31] Source: https://www.youtube.com/watch?v=S6n26bBBr80; Uploaded on April 21, 2017. Retrieved on October 14, 2019.

know how to implant intra-brain pacemakers that work and help people with Parkinson's, and use tDCS to improve focus and performance, it does not sound all that impossible.

Musk is not the only one predicting such a technology, and there is a chance he is not the only one actively promoting them. One of today's major futurists, maybe even the most influential futurist, is Ray Kurzweil. In his book, "The Singularity is Near" (2005) he foresees that the advancement of artificial intelligence to a point that it surpasses human intelligence will bring us to a "singularity point", a point that will change the entire arrangement of the world we perceive and live in. It is highly likely that Kurzweil influenced Musk, since Kurzweil predicted (in 2005) that by 2030 a technology of nanobots inside our brains will be used to connect us to the computers who by then will display much stronger AI. He refers to it as the merger of biological intelligence and non-biological intelligence. Kurzweil claims that the velocity of the biological intelligence is very slow compared to that of the non-biological intelligence, and the connection between them will enable people to use the speed of AI. Ultimately the non-biological intelligence will be much stronger than the biological one. This will happen, according to Kurzweil, by 2045 at the latest. The merging of the brain with AI is inevitable if we want to keep existing or to stay relevant or in some sort of control over our world. In the long run this merger might lead to our consciousness leaving our biological body and existing in some sort of a cyberspace. Kurzweil portrays this as one of the possible scenarios by which people could become immortal.



Image 1.9: "San Junipero" is an episode from the series "Black Mirror". The episode is about the falling in love of two women who meet in an artificial world to which people can send themselves (or their electronically downloaded consciousness) to before their biological body dies. In the artificial world they

can exist forever as which version of themselves they wish. This is a vision of a technologically man-created heaven.[32]

Kurzweil analyzes that there is still one key component that has not been understood well enough for this prediction to be fulfilled, and that is the phenomenon of consciousness and the way it is created.

Since 2012 Ray Kurzweil is the head of engineering at GOOGLE, meaning he is in the position to put his theories about Artificial Intelligence, brain-machine interface and others to practical development, and rumor has it that he does exactly that. He is also practicing a rigorous lifestyle with the goal of "*living long enough to live forever"* ("The Singularity is Near", p.350 of the Hebrew edition).

Michio Kaku describes in his book, "Future of the Mind" (2014), a prediction not far from Kurzweil's. Kaku talks about a post biologic era in which technology will enable the mind to exist outside the biological body and in virtual artificially manufactured landscapes.

With Musk, Kurzweil and Kaku's visions of a transcendent man I conclude the review of the technology of human enhancement. The review went through genetics, biochemistry, biohacking, and man-machine hybrids and explored how humanity uses technology to satisfy its desire to be better, to win, to outrun, outsmart and even outlive the competition and its own biological boundaries. As part of my science fiction creative process the review had two critical values for me: the first is validating my desire to write a story about human enhancement by anchoring it in a current growing phenomenon – human enhancement is something that really happens and occupies scientists, developers and the public; the second is providing me the building blocks from which I can make some of the most important decisions as a science fiction creator – the decisions about the technology I want to lay out in my story.

[32] Source: https://www.imdb.com/title/tt4538072/; Retrieved on October 14, 2019.

1.3 Post-humanism and transhumanism: the moral debate and social questions of human enhancement

At the beginning of the technology review of human enhancement I claimed that a science fiction author should know his technology. At this point I want to place another claim: the author of science fiction should also know the social and moral questions that the technology raises and ponder his stand. Both claims will have to be justified in the parts of the thesis dealing with the science fiction genre and the creative process.

By "stand" I refer to the composition of the theme of the story, the thoughts and related emotions I want to summon in my readers and viewers, and at the very least, understanding what the issues and the questions are. "Stand" does not mean a simplistic "for" or "against" position and can be complicated – which in itself is a creative decision.

The same way that I surveyed the technology of human enhancement in order to be the base of the technological world-building of the story, it is important to study the moral and social debate about human enhancement in order to create the moral tone and resonance of it and to be able to respond and echo at least the current state of the debate and be relevant to its discourse. And some debate it is.

There are many philosophers and scholars who take part in the discussion about human enhancement, yet this discussion can be traced to the dinner table of one family: the Huxley family. Two of this family's sons are Aldous Huxley, the author of "Brave New World", and Julian Huxley, an evolutionary biologist, a prominent scholar, and the first director of UNESCO. Aldous Huxley's famous "Brave New World" (1932) is a dystopian science fiction novel that describes a society in which strict genetic regulation is used to "produce" babies with differentiated capabilities. These babies are destined to take their place in a class system, with each class system serving a role in the societal and economical structure based on its genetical design from people who are designed to be smart and take their place in leadership or development roles, to people who are born to be dumb and take their place in lower-class jobs. "Brave New World" is a world in which no one knows hunger, violence or illness, but it is a world without freedom. This is a frightening vision for what centralized control over genetic engineering might resort to. Julian Huxley, on the contrary, was very

optimistic and hopeful about man's ability to transcend himself to better existence. Julian Huxley even coined the term "transhumanism" in his 1927 book "Religion Without Revelation":

> "The human species can, if it wishes, transcend itself – not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this new belief. Perhaps transhumanism will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature" (taken from "Citizen Cyborg", 2004, by James Hughes, p.158)

There are many concerns and arguments about the moral and social aspects of human enhancement, most of which will be presented here, but all branch out from the difference between Aldous Huxley and Julian Huxley. This difference can possibly be viewed as a difference in sentiment, between being optimistic or being pessimistic about the technological advancement of human enhancement and what it will do for humanity.

1.3.1 Nietzsche's Superman

Another prominent concept which provides a pillar for this discussion is Friedrich Nietzsche's "Superman". In his book, "Thus Spoke Zarathustra" (1883-1891) he coined this term to describe a human being which he suggests as the goal for deliberate and designed human evolvement. This "Superman" ("Übermench" in German) is not fully characterized by Nietzsche, but does indicate that the superman will replace current and failing value systems (such as religion) and replace them with a new set of values, dedicated to the joy of life and creation, to compassion and justice. Nietzsche suggests that women will have the goal of raising "supermen" in mind when choosing men for mating and in the upbringing of their children. He also makes an analogy that the "superman" is to current humanity, as the current humanity is to monkeys.

Nietzsche portrayed his "superman" in a relatively vague way, open to interpretations (Eshed, 2011): Christian interpretations regard the "superman" as a divine being, comparing him to Jesus; Jewish interpretations compare him to the Messiah, a flesh and

blood person who can help humanity reach its moral potential. Nietzsche's "Superman" is considered to be highly influential of Nazism, even inspiring to the Nazi race theory, catalyzed by Hitler's great interest with "Thus Spoke Zarathustra" and Nietzsche's own antisemitic sister who, after his death, promoted his writings and managed his archives. It is also cited by anarchists as an inspiration and considered as part of the motivation for several murderers throughout history, who used Nietzsche as a rationalization of their actions, relating to themselves as "Supermen".

The book has influenced the creation of many stories, among which is the comic character of "Superman" (who, initially, was a villain character who considers itself superior to people), Alfred Hitchcock's film "Rope" (1948), George Bernard Shaw's play "Man and Superman" (1903), Olaf Stapeldon's novel "Odd John" (1935), and others. The characteristics and moral interpretation of the "Superman" varied greatly, from accepting it as a moral goal to portraying it as a dangerous notion of someone who considers himself superior.

If there is something to be learned from both the Huxleys' "dinner table discussion" and Nietzsche's "Superman" with its varied meanings, it is that this subject is highly complex and morally charged, inspiring both evil and ruin on the one hand, and advancement, wealth and well-being on the other.

1.3.2 Pro-enhancement arguments

One very strong advocate in favor of pursuing enhancement is the director of the Future of Humanity Institute at Oxford – Nick Bostrom. In 2008, he published an article called "Why I want to be a post-human when I grow up", where he says enhancement is basically meant to increase the health-span of people (both their life-span and the health-related quality of life), their intelligence and their emotional resilience. He claims that it is also meant to help people to live a healthier, longer, happier life with better intelligence that enables them to better understand the world, acquire skills, and be creative in their field of interest. Bostrom says that all of those are strong and common desires that people have, and if enhancement will achieve those then it should be considered a positive development.

Bostrom admits that since none of us are enhanced, we cannot completely say that it is a worthwhile or an unworthy experience; he speculates that everything human enhancement will advance are desirable qualities of life. Although he knows we cannot fully imagine the experience of being radically enhanced in those dimensions, he tries to provide a general picture of the life of an enhanced person:

> "You have just celebrated your 170th birthday and you feel stronger than ever. Each day is a joy. You have invented entirely new art forms, which exploit the new kinds of cognitive capacities and sensibilities you have developed. You still listen to music – music that is to Mozart what Mozart is to bad Muzak. You are communicating with your contemporaries using a language that has grown out of English over the past century and that has a vocabulary and expressive power that enables you to share and discuss thoughts and feelings that unaugmented humans could not even think or experience. You play a certain new kind of game which combines VR-mediated artistic expression, dance, humor, interpersonal dynamics, and various novel faculties and the emergent phenomena they make possible, and which is more fun than anything you ever did during the first hundred years of your existence. When you are playing this game with your friends, you feel how every fiber of your body and mind is stretched to its limit in the most creative and imaginative way, and you are creating new realms of abstract and concrete beauty that humans could never (concretely) dream of. You are always ready to feel with those who suffer misfortunes, and to work hard to help them get back on their feet. You are also involved in a large voluntary organization that works to reduce suffering of animals in their natural environment in ways that permit ecologies to continue to function in traditional ways; this involves political efforts combined with advanced science and information processing services. Things are getting better, but already each day is fantastic." (Bostrom, in "Medical Enhancement and Post Humanity", eds. Gordijn and Chadwick, 2008, p.111)

More joy, better health, longer life, deeper appreciation and understanding of ideas and beauty, and even a stronger sense of empathy and compassion. Is it not a wonderful thing? John Harris (2007) defines human enhancement and making people live longer and be

happier, smarter, stronger, healthier and fairer as a "moral imperative". Having many more intelligent people in the world is a good thing according to Harris. Savulescu (2009;2011;2014) even argues for the use of enhancement technologies, such as embryo selection and genetic engineering, to promote the enhancement of desired morality. This means the modification of undesirable moral traits such as a tendency for violence or extreme anti-social behaviors or reducing their frequency in the world and making desirable traits such as empathy, generosity, and so on more frequent.

Bostrom, Savulescu, Harris, and other scholars who can be counted as supporters of enhancement (such as Hughes, 2004; Dworkin, 2000; Veit, 2018; Naam, 2005) base their argument on more than the promise of good it could bring to mankind, but also on liberal ideas of freedom of choice and one's control over his/her body, including that of the mother who has every right to get every information she can about her fetus and make the decisions about keeping him/her, and also modifying its genetic compound.

1.3.3 Enhancement might interfere with human nature

Yet the Aldous Huxley intellectual descendants raise many social and moral issues and dangers regarding enhancement and turn it into a storming debate that accelerated in the previous decade and continues until today.

Francis Fukuyama, in his book "Our Posthuman Future" (2002), makes a fierce warning that the radical advancements in biotechnology, especially in the development of genetic engineering and psychotropic drugs, threaten the core meaning of being human:

> "The aim of this book is to argue that Huxley [referring to Aldous Huxley, E.B.M] was right, that the most significant threat posed by contemporary biotechnology is the possibility that it will alter human nature and thereby move us into a "posthuman" stage of history." (Fukuyama, 2002, p. 7)

The term "posthumanism" is different from "transhumanism". Although these words sometime interchange in meaning and are sometimes interpreted a little differently, generally their most frequent usages in this discourse gives "transhumanism" the meaning of being positive and even wanting and anticipating the possibilities that enhancement

technology might offer, while "posthumanism" is a broader term that defines the school of thought that tries to understand what will replace humanism as the governing pillar of society. "Posthumanism" may include "transhumanists" who welcome the posthuman era, and philosophers such as Fukuyama who dread it (or try to analyze its consequences). Generally, a "posthuman" approach is more skeptical and critical of enhancement.

After explaining the terms, it is worthwhile to understand why Fukuyama considers enhancement as such a threat to humanity. His approach considers "being human" or of what human nature is, as:

> "[T]he sum of the behavior and characteristics that are typical of the human species, arising from genetic rather than environmental factors." (p. 130)

Once enhancement technology starts dramatically changing the range, the frequency, and distribution of the traits that we now perceive as human, making some traits reach completely different levels or creating a huge imbalance in others, then we will not be able to recognize what is human anymore. As a result, all social systems, that are based on the assumptions of human rights and human dignity, and rely on a shared common perception of humanity, might collapse:

> "Human nature shapes and constrains the possible kinds of political regimes, so a technology powerful enough to reshape what we are will have possibly malign consequences for liberal democracy and the nature of politics itself." (p. 7)

Habermas (2003) and Agar (2010;2014) share Fukuyama's concern, and claim that the infusion of the biological and the technological could change the way man develops his moral consciousness, that it is an instrumentalization of the human nature and will crumble human moral agency.

What Fukuyama suggests is that states will heavily regulate the development of human enhancement technology, and in fact limit it from ever reaching a point at which it is too advanced to cause such a change in the authentic human nature:

> "We should use the power of the state to regulate it. And if this proves to be beyond the power of any individual nation-state to regulate, it needs to be regulated on an international basis." (p. 10)

The historian and futurist, Yuval Noah Harari, in his book "Homodeus" (2015), offers another way to look at this issue. He says that enhancement will develop out of existing human desires and goals, but those might be the subject of enhancement as well:

> "How will we know how to shape the consciousness of future people? What determines which capabilities should we develop in them and which to neglect? According to technohumanism the human will should make this call. But what will happen if technological advancement will enable us to reshape the human will?" (Noah Harari, 2015, translated from the Hebrew edition, p. 382)

If enhancement will mean that we can change motivations, then what will be considered a genuine human sentiment and desire?

The problem with this criticism is its relative vagueness, with Bostrom (2008) and Hughes (2004) claiming it is not providing sufficient evidence that what happens in this posthuman era will necessarily be bad. Zylinska (2010) responds to that by saying that what Bostrom, Savulescu, and Hughes are portraying and picturing as the "good" direction and results of enhancement is representing their own humanistic and even liberal-democratic view of the world, and this is a starting point that should be questioned for its validity when enhancement will change what we now know as human. Noah Harari sums up this idea nicely:

> "There are many smart answers to the question: 'what will human beings with desires and a mental structure like ours will do with genetic engineering?', but there is no smart answer to the question: 'what will entities with desires and mental structure different than ours do with genetic engineering?'. It is probable that human beings with desires and mental structure similar to ours will use genetic engineering to alter their own desires and mental structure – and about what happens afterwards there is no ability and therefore no point to discuss." (Noah Harari, Hebrew edition, p. 45)

1.3.4 The value of achievement

A related argument about the use of enhancement is the question of the worth of achievement while enhanced. Miah (2016) makes an analogy to a mountain climber who gets to the top of the mountain by helicopter. No one, including the climber, will treat this achievement as worthy. However, if a researcher using coffee, or modafinil, makes a valuable discovery – then the value of the discovery is high and there is no "unfairness" to it. So even though the means to an end matter (as Miah phrases it), the picture is not clear as to what achievement loses its value because of the use of enhancement. Leon Kass (2003) is opposed to enhancement partly for this reason:

> "In most of our ordinary efforts at self-improvement, either by practice or training or study, we sense the relation between our doings and the resulting improvement, between the means used and the end sought. There is an experiential and intelligible connection between means and ends; we can see how confronting fearful things might eventually enable us to cope with our fears. We can see how curbing our appetites produces self-command. ... In contrast, biomedical interventions act directly on the human body and bring about their effects on a subject who is not merely passive but who plays no role at all. He can at best feel their effects without understanding their meaning in human terms." (Kass, 2003, "Ageless bodies, Happy souls", p. 22, quoted by Bostrom and Roach, 2008)

Extrapolating Kass' point might also question the use of anti-depressants or anti-psychotic drugs, or other biochemical substances which take place in coping with miseries and illness and adhere to the logic he presents. The line here is thin. Opposed to him, Bostrom and Roach (2008) make arguments that even the use of steroids in sports is not that immoral.

1.3.5 The inequality argument

A third controversial point attached to the human enhancement debate is the issue or resulting inequality. If the issue of enhancement as threatening the nature of humanity was a little vague, the issue of inequality is much more concise: it is more likely that

enhancement technologies, at least in the beginning, will be too expensive to be affordable and widespread, and therefore accessible to few people. What will happen at this point? Noah Harari speculates that the growth of enhancement, combined with the growth of artificial intelligence technology, will pose a threat of dividing humanity into two levels of humans:

> "A third threatening option is that individual people will still be of value, but only a small number of enhanced superhumans. These superhumans will enjoy wonderful capabilities and unprecedent creativity and will keep making some of the most important decisions in the world, but most humans will totally lose their value, not only because they wouldn't be able to compete with the new computerized algorithms, but also because they wouldn't be able to compete with the new superhumans. In this case, liberalism will collapse as a result of opening unprecedent gaps between different human groups, and especially between the rich and the poor" (Noah Harari, Hebrew edition, p. 363)

This kind of scenario seems probable. It would be naïve to assume that there would not be any kind of a gap between people or societies that begin to use these technologies and others who do not. Bioethicist Erik Parens (1998) identifies this loop:

> "Those who already have economic resources will readily gain access to new technologies and those new technologies will make them stronger competitors for more resources."

This gap might be between rich people who either genetically enhance their children or finance the development of man-machine technology and use it to better themselves or their children. It might be a growing difference between Western countries and Third World countries (does anyone think that in the current state of the world, that even when there will be radical enhancement technologies, they will be accessible to someone in Ethiopia or Senegal?).

The possibility of enhancement creating a "superior" species of humans rings a very loud bell to the ears of humanists. It echoes the Nazi ideology. Noah Harari categorizes enhancement as a manifestation of an "evolutionary humanistic" ideology, that has in its

core values the idea of bettering man's abilities and asserting man's will over nature, an ideology that is the foundation of Nazism:

> "this idea is an updated recurrence of evolutional humanism, that even a hundred years ago belittled the value of "regular" sapiens and preached for the creation of superhumans with amazing abilities. The main novelty is, that while the evolutional humanism of the beginning of the 20th century thought to create superhumans through education, selective reproduction and the extermination of lower human races, 21th century technohumanists hope to do it through genetics, nanotechnology and brain-computer interface." (Noah Harari, Hebrew edition, p. 368)

Bostrom, Savulescu, Veit and Hughes respond to the issue of inequality in several ways. First, they claim that technological and scientific progress had always proved to benefit and raise the living standards of all people, and that the fear of new technologies separating humanity and increasing gaps usually was proven wrong – new technologies lead to greater growth, more jobs etc. Second, they argue that new technologies might start off as expensive but gradually become cheaper and accessible to most or all. However, those claims rely very much on the assumption that the way things happened in the past will remain the same, a claim that might be true to human enhancement and might not be true (Zylinska, 2010). There could be a reason to suspect that the first people to possess high level human enhancement technology will use it in a different way from the first people to hold a smartphone in their hands. The last would see the smartphone as a product with commercial value, and the first might view enhancement not as a product, but as a way to change themselves.

Savulescu (2011) suggests that inequality exists by nature and by circumstances as it is, that it is widely accepted because it is considered natural, and that it happens even without enhancement technologies. He claims that inequality and other injustices, such as racism, are social problems that should be dealt with regardless of enhancement. He claims that enhanced intelligence could contribute to coming up with solutions to such social problems, and that it might be a strategy to reduce inequality. Yet, even Savulescu, in a

2016 interview[33], admits that current socio-economic reality might lead to a not so optimistic scenario.

Veit (2018) claims that human enhancement technologies' benefits outweigh any inequality objection. Moreover, based on the findings of Randall et al. (2005), who found that the cognitively enhancing drug of Modafinil has greater effect on people with lower IQs, Veit claims that enhancement technologies might even close inequality gaps.

Hughes (2004) agrees that there are some social conditions that need to be addressed in preparing for the enhancement age and avoid the inequality problem that might arise. The main mechanism he offers is that the state and international organizations will use their resources to invest in a public development of enhancement technologies and make sure that when it is developed enough it will be accessible and affordable – and at that point the state will issue "vouchers" for people to enhance themselves, breaking the relationship between current wealth and prospective use of this technology. According to Hughes, a government today should consider buying existing and proven tDCS products for school children, maybe even just for children with attention deficit problems, because it will help them learn better, achieve more, and close existing learning gaps.

So, even enhancement supporters claim that these technologies can cause an increase in social gaps, although to what extent, whether it will be just an extrapolation of current gaps, whether it will be temporary until the technology becomes cheaper and more evenly distributed, and overall what will be the pace of the advancement – those are questions that will play a major role in the shaping of the future and are open to several scenarios.

1.3.6 The thin line between therapy and enhancement

Another area in which the ethical debate about enhancement takes place is the line between medical treatment and enhancement. Even "enhancement opposers" like Fukuyama or Sandel (2004;2007) agree to biotechnological advancements in medicine, so, asks Bostrom and Savulescu, where is the line? And is there a line? Even medicine, in the last decades,

[33] Source: https://www.youtube.com/watch?v=4qary81ymWk; Uploaded on July 14, 2016; Retrieved on October 14, 2019.

has begun to shift towards preventive and salutogenic (Antonovski, 1979) approaches, dealing with enhancing health and well-being rather than just fixing the wrong. Naam (2005) claims that it is impossible to separate therapy from enhancement and that enhancement will benefit people's life in various ways, so the legitimacy of research in therapy is fully applicable to it, while Lin and Allhoff (2008) counterclaim Naam by saying that although the therapy-enhancement distinction is hard to define, it does not mean the two are the same and can be morally regarded as belonging to the same group.

Miah (2008) tries to provide a framework for this question by creating a typology that divides human enhancement into different levels:

1. Engineering Traits of Accepted Value (e.g. greater resilience to disease, such as the fluoridation of tap water or inoculations)
2. Engineering Traits of Contested Value (e.g. engineering piety and patriotism)
3. Radical Transhuman Enhancements
    a. Extending Human Capabilities (e.g. height enhancement)
    b. Engineering New Kinds of Human Function (e.g. changing color, flight).
        i. Within the realm of biological possibility (e.g. flight capability)
        ii. Outside of biological possibility (e.g. capacity to live in non-gravitational environments)

Miah says that the ethical decision-making is different for every category, hence "human enhancement" cannot be related to as a complete concept. His take on the levels says roughly that level 1 (expanding accepted traits) should be considered positive, level 2 (enhancement of questionable traits) should be beyond the line of acceptance, and level 3 (radical enhancement) is a discussion on speculative technologies and is too early to have.

It is not clear that there could be such a distinction. As Noah Harari writes:

> "The first justification for human enhancement projects is nearly always the healing of disease. If you'll ask professors who deal with genetic engineering or connecting brains to computers and ask why they are doing their research, they will explain that they're doing it to cure illnesses. 'through genetic engineering', they will say, 'we could cure cancer. If we will connect brains directly to computers, we'll be able to treat schizophrenia

> much better'. It is naïve or playing naïve. Does anyone really believe that when they will find out how to directly connect a brain to a computer, they will use it only to cure schizophrenia? If there are people who do believe that, then they know a lot about brains and computers but much less about the human soul and human society.
>
> From the minute that a discovery as such occurs, it is impossible to restrict the use of it for medical purposes only and ban enhancements. No limitation will hold when on the other side of the scales stands eternal youth or genius children. The politicians who will publicly vote in favor of the restriction will be first in line for the secret North Korean clinics, where they will perform the treatments that are not allowed in the USA." (Noah Harari, Hebrew edition, p. 50)

Medical research cannot be scientifically separated from research that will lead to enhancement. It might, however, slow it down a little bit. The vast majority of governments and public funds will finance research with medical goals and deny research for enhancement related goals. This financing mechanism provides a passive regulation to the advancement of enhancement – it does not encourage such research, but it does not ban it. This policy leaves a significant space for private (or in DARPA's case military) initiatives, like Elon Musk's "neuralink", to play a major role in the development of these technologies, which probably promotes a scenario by which the decision to share the technology or make it accessible will be in the hands of a private, wealthy person, and not in the hands of government officials or elected persons that are supposed to answer to the public.

1.3.7 Might enhancement be crucial to humankind's survival?

Some Transhumanists, like Elon Musk and Ray Kurzweil, claim that enhancement is essential to the survival of humanity in general. In his 2018 interview (covered earlier) Musk talked about enhancement as essential to keep up with artificial intelligence (AI), so

AI will not replace us. Kurzweil, as reported in a 2017 article[34], says that AI will not replace us, but rather enhance us. So, Kurzweil also sees it as a must in relation to the growth of AI. Noah Harari (2015) also sees this "battle" demanding humans to enhance:

> "If we are facing a split between consciousness and intelligence, and if consciousness-less intelligence begins to develop in a dizzying pace, then consciousness must begin to upgrade itself if it wants to stay relevant." (Noah Harari, Hebrew edition, p. 368)

Juan Vasquez (2015) presented an interesting point of view about the potential importance of enhancement – that life on earth and the current human biology are fragile and suspect to all kinds of dangers and threats. The point of enhancement is to prepare humanity to various risks as such. He gives the example that any person in an organic biological body will not survive in space, or on the sun, or under many physical scenarios. If so far most of the discussion on this issue has been on things like intelligence, or maybe physical appearance and athleticism, Vasquez opens up the thought for all different kinds of enhancement – like improving hearing, bat-like sonar sense, flight ability, thermal vision, hot-resistant skin (or cold-resistant), a camel-like internal nutrition system, and many more capabilities that might be useful in space, on other planets, in case of an ecological disaster or simply that someone thought it would be useful or cool. This view, apart from the survival argument, also ignites the imagination for this type of technology becoming a diversified social phenomenon – all kinds of people take on different types of enhancement or body modification. The world might be inhabited by different "persons" that are designed differently, representing different types of being with diverse modifications.

1.3.8 Can and should enhancement be regulated?

One of the main issues in the pro vs. against enhancement debate is whether governments and/or international organizations should regulate research, development, and distribution of these technologies. Fukuyama (2002) suggested that governments should not only

[34] Source: https://futurism.com/ray-kurzweil-ai-displace-humans-going-enhance; Published on November 7, 2017. Retrieved on October 14, 2019.

regulate it but completely restrict it. Following Fukuyama are most anti-enhancement scholars, like Agar (2010), who regard governments as the main entities which hold the authority and power to do so.

On the pro-enhancement side there are two major claims. The first is that, as with many other technologies, the attempt to regulate the evolvement and usage of enhancement technologies is futile (Naam, 2005) and might even lead to a much more dangerous, unequal black market (Bostrom & Sandberg, 2009). Veit (2018) says that prohibiting it might lead to the worst possible outcomes of all regulative policies regarding enhancement. They also state that the difficulty of differentiating therapy and enhancement will make the effort into an unsolvable legal mess. The second claim, made by Hughes (2004), is that governments should get involved in the research and development of these technologies and should even lead the way. This way, Hughes claims, is one of the best ways to ensure that enhancement technologies will not create too large an inequality. Bostrom (2003) suggests that when such differentiating technologies be available, governments should give vouchers and subsidies to those who cannot afford them.

1.3.9 The enhancement political landscape

An interesting aspect that enhancement could change is the political landscape. Hughes (2004) has predicted that biotechnology will be a third major dimension of the 21st century political discourse along with the cultural progressive/conservative dimension and the economical progressive/conservative dimension:

> "The political terrain of the twenty-first century will add a new dimension – biopolitics. At one end of the biopolitical spectrum are the bioLuddites, defending humanity from enhancement technologies, and at the other the transhumanists, advocating for our right to become more than human." (Hughes, 2004, p.55)

Some of what Hughes is foreseeing comes to life with the establishment of the transhumanist party in USA and some other places. The transhumanist party is highly associated with the libertarian party, and its elaborated platform includes the following[35]:

> • Individual privacy and liberty over how to apply technology to one's personal life. [Article III, Section I]
>
> • Support of all emerging technologies that improve the human condition, including:
>
> ° Beneficial genetic modification of plants, animals, and human beings [Article III, Section IX]

The ideas of the transhumanist party are highly influenced by Hughes' ideas. However, even after they ran a presidential candidate, the transhumanist party and movement are still a rather fringe movement. By and large, most governments and political discourse is quite conservative when it comes to dealing with biotechnological ideas. Hughes might refer to today's politics as "bioLuddites", or it is possible that aside from abortion rights, most of politics is indifferent for the time being to questions about enhancement and biotechnology. This can also explain the passive and conservative regulation and policy regarding the finance of biotechnological research and enhancement – public establishments will finance research that shows relevance to medical issues, which might be related to enhancement, but will not restrict or regulate research and development done directly about it. Politics usually responds to necessities of the present, and enhancement is still very far from being a pressing matter or a phenomenon that overtly affects the daily life of people. In general, there is evidence that the general public is still wary of ideas about enhancement. Research undertaken in 2016 by the Pew Research Center[36] showed that most of the people (between 66-68%) are against genetically designing babies and/or implanting chips in the head. This could be a picture of a reality that precedes the beginning of an era of bigger advances in enhancement, painted by a normal fear of progress, and when technology will start to move

[35] Source: https://transhumanist-party.org/platform/; Retrieved on August 2, 2019.
[36] Source: https://www.pewresearch.org/science/2016/07/26/u-s-public-wary-of-biomedical-technologies-to-enhance-human-abilities/; Published on July 26, 2016; Retrieved on October 14, 2019.

forward the public debate will change as well (or of a good TV series about the subject comes out). Yet, so far, Hughes' prediction is not becoming a reality.

1.3.10 Wrapping the discussion

Is the debate about enhancement due? Miah (2008) thinks it is premature. The feeling that any of the issues raised can be sufficiently answered or settled due to the ambiguity of how things will evolve might support his claim. Others, like Agar (2010) and Zylinska think that the "for" and "against" debate is obsolete because we already live in the age of enhancement, so the discussion is definitely on time (even though it is not an emergency), but that it should focus on how to handle enhancement and not on whether it is good or bad.

Is enhancement the savior of humanity in its future struggles and the rescuer from present miseries? Or is it the end of it? Will it lead to humanity losing its common qualities? Will there be a new superior species of people that will make "regular" humans redundant, or will enhancement technologies, mediated by governments or the free market, be made accessible to all? Will countries invest in enhancement or leave it to private hands? And if they will – will it be for military purposes first (and last)? How will enhancement technologies develop – in huge exponential leaps, accelerating themselves, or gradually and slowly, at a pace that will give the world a chance to contain it? Will enhancement turn out to be the creation of intelligent superhumans, or maybe it will be more diversified, with all kinds of people and communities taking different sorts of enhancement – like some growing wings, some developing empathy, some designing themselves to survive in space etc.? Should we humans "wait and see" or take an active stand, now? Would the enhanced me have made the decision to get enhanced if he was me? Being as stormy, elaborated, and with as many participants as it is, it still feels like the moral and social discussion about human enhancement only scrapes the surface of the issue, maybe suffering from the large amounts of uncertainty that still exist around what the enhancement technologies will really be and when they will begin to take a major place in our world. Answers might be provisional, and at this point affected from a basic sentiment towards technological

process: being a techno-pessimist like Aldous Huxley, or a techno-optimist like Julian Huxley.

And now I get a step closer to the question of how science fiction can handle such a debate and dramatize it, and to my own personal question of how to include and represent it in my series.

Part 2 – Science fiction

In part 1 of the essay I have reviewed the technology and the philosophical, moral and social aspects of it that I wish to write about. I have claimed that the author of science fiction must know his technology for the building of the story's world. But why is building the story world so important? How and why is it different for science fiction than for other genres? These are only two of many questions and issues revolving around the creation of science fiction.

I would like to begin this part of the essay with another claim: a writer, in any genre but certainly in science fiction, must know his genre. This claim is the starting point of this part which will deal with understanding the genre, its conventions and techniques, the way it shapes its themes and the audience's experience. It will also deal with looking at how science fiction has dealt with human enhancement and maybe transhumanism and post-humanism in general, reviewing selected creations and learning from them.

There are a few reasons for including a research and review of the genre and of creations resembling the themes and subjects I wish to write about in this work:

1. As a writer it helps me to understand and reflect on my writing, assess my writing and make informed decisions about the use of conventions, structures, techniques etc. in my own creation.
2. From the "research-through-creation" point of view, it is important to use conventions and examples of the genre to "fuel" the creative process. It enables me to deepen and provide more justifications to my insights about writing science fiction.
3. Knowing what has been done in different kinds of science fiction, in pieces which are close in spirit and in theme and subject to mine, helps me to "position" my work, helping me in creating a story which is "new enough" and does not repeat previous stories in an overwhelming way, but at the same time draws on its "family members" – continues the genre or the genre trends while making itself unique.

4. This is, after all, an academic work (even if it is in the unique form of "research-through-creation"), and to do it properly, delving into the theory of the genre is essential. It serves to illuminate and direct the insights about creative writing within the genre.

Before going into science fiction theory and looking at novels, stories, movies, and TV shows, I would like to express something which, for me, is very basic, but can be a little forgotten when entering the nuances of a genre. It is that every science fiction story is, above anything else, a story. This means that the first "test" of the story is whether it evokes emotion, laughter, tension, excitement, fear, and causes the recipient (the reader or the viewer) to empathize with characters who want to solve complicated and emotionally charged problems and achieve something very important and difficult. If a story does all that, it is a good one, no matter what genre it is. If the story also causes the audience to reflect on their values and beliefs and the norms of society, maybe question them, it is even more than just a good story.

Having said that, talking about genre is crucial and cannot be divided from talking about the story. A story cannot be "good" as a story and "not good" compared to its genre. The story comes already genre-packed, a whole creation in which the "general story" parts and the "genre" parts blend together, unable to be separated. The researcher's or the writer's eye can artificially address the way the components of the story reflect, respond, or use principles or conventions of stories in general and those of a genre.

The last remark before entering the discussion about the genre is more technical: when talking about science fiction I am not restricting myself to one medium and the work refers to most of the narrative arts - novels, stories, movies, and TV shows (yet not video games or theatre). However, being a screenwriter and writing a thesis dealing with screenwriting, there will be a strong tendency to cite and address movies and TV series more. The decision to write a TV series as opposed to a feature film screenplay will be discussed in part 3 of the thesis – the creative part.

2.1 Defining science fiction

The preface to this part and the essay so far has referred to science fiction as a genre. This might have been a little premature:

> "If sf were a genre, we would know the rough outline of every book that we picked up. If it were a mystery, we would know that there was 'something to be found out'; if a romance, that two people would meet, make conflict and fall in love" (Mendelsohn, 2003, in "The Cambridge Companion to Science fiction", p.2)

Science fiction, therefore, is not exactly a genre. This is, of course, dependent on how one defines what genre is. If it is a specific story form, in which its structure includes a typical storyline and highly resembling steps or beats, then science fiction is not a genre. The love story of a film like "Eternal Sunshine of the Spotless Mind" and the intergalactic war saga of "Star Wars" have next to nothing in common in their structure and in the experience they convey to the spectators. Yet they both can count as science fiction movies. This point of the variety of science fiction could have been exemplified by thousands of other examples, but that would be tiresome.

Adam Roberts, a science fiction writer and researcher, agrees with Mendelsohn:

> "Science fiction is not a 'genre'; fantasy is not 'another genre'; They are both collections of subgenres, related families of writing types that get lumped together by marketing people and booksellers." (Roberts, 2014, in "Get Started in Writing Science fiction and Fantasy", p.22)

But there is such a thing as "science fiction". When we read or watch it, we almost always recognize that it is part of this group. Book marketing people and film distributers place the "Sci-Fi" (an abbreviation that science fiction writers and fans usually reject) tag for a reason, and this is that it attracts more or less a defined sector of the audience (although this sector is very dynamic and evolving – the range of readers and/or viewers of "The Handmaid's Tale" differ from those of "Ready Player One").

One way to unify science fiction after all and make it deserve its title as a "genre" is offered by Peter Russell, a screenwriter and a screenwriting teacher. In a 2018 webinar Russell

said that “In science fiction, technology causes the problem and technology needs to be used to solve the problem”. Russell’s claim is more than just saying that in a science fiction work the author places all kinds of non-existing technologies and/or creates a world in which science has progressed, and/or nature and the laws of nature underwent a change, bent or caused an extreme and yet unknown outcome (yes, I have quite stretched the use of the term “technology”) – Russell is saying that this technology takes part in creating the problems the characters in the story face, and in some way the technology has to take part in solving the problem or achieving the goal of the story. Usually, according to Russell, this solution happens when the hero manages to master the technology and use it to his/her advantage. For example: in “The Matrix” (1999) the problem is caused by a technology that makes people believe they live in a “normal” world, when in fact this world is a simulation and people are actually enslaved to advanced machines who use their bodies as batteries. The problem is solved when the hero learns how to manipulate the simulation and overcome the forces which were sent to destroy him within it.

I think that Russell’s idea does not “hold” as a definition, especially when trying to apply its second part. Too many stories are science fiction stories even when their problems are not solved through the technology. Even “Star Wars” is ending with the hero achieving a control over “the force”, which is not a technology but rather an innate power related to believing in one’s self (for fairness, some might consider “the force” to be a tool too, hence – a technology). Russell’s principal does carry weight, perhaps not as a real definition, but as a unifying motive.

One of the most influential screenwriting teachers today, John Truby, uses his own perception of what genre is to provide guidelines to the story beats and the underlying structure of science fiction. Truby begins by identifying a thematic characterization of the genre: “Science fiction is about human evolution in the grandest scale.” (Truby, 2009, “Secrets of Genre”, p.7). Does this statement not go perfectly with the subject of human enhancement? This is a broader way of looking at science fiction that deals with how humanity and human life might change or evolve due to its coping with a technology, natural change, scientific discovery, or abnormality that makes the world different than the one we know.

2.1.1 The tools of the world – science fiction, technology and the 'novum'

In Truby's story system there is a very important role for the desire line of the hero (and other characters). He differentiates genres according to their hero's typical desire line and describes the desire line of a science fiction story as "To deal with the tools of the world". Truby, here, is getting very close to Russell: the "problem" that Russell talks about, and the "desire line" according to Truby are the most primal and basic "engines" which create the story and give it the momentum and movement - the reason that the hero goes on a mission. Without it there is no story, and both Russell and Truby relate this "engine" to technology – the story begins with some sort of disruption to the way the world and/or humans live, caused by a yet unknown technological function or scientific twist/circumstances, and people (including the hero) must somehow cope with or solve the problems and disruptions caused by it. Here are a few examples:

- In "Star Wars" Luke Skywalker joins the rebels to fight the empire, which uses a new destructive technology – the Death Star which can destroy whole planets.
- In "Children of Man" (a 1992 novel by P.D. James, turned into a 2006 movie directed by Alfonso Cuaron) humanity deals with the complete arrest of reproduction, and the hero is sent to protect the first pregnant woman in 18 years.
- In "Gravity" (a 2013 movie, again directed by Alfonso Cuaron) the hero tries to go back to earth after her spaceship is damaged.
- In "Gattaca" (a 1999 movie directed by Andrew Nicol) the hero is a person born with no genetic selection into a world in which genetic selection determines social roles and jobs and tries to enter a space mission program reserved for people with specific genetic qualities.
- In "Eternal Sunshine of the Spotless Mind" (a 2003 movie directed by Michel Gondry) the hero learns that his ex-girlfriend had him completely erased from her memories, and he tries to erase her as well but during the process his inner self begins to fight and protect the memories.

- In “The Handmaid’s Tale” (a 1985 novel by Margaret Atwood, turned into a TV series first aired in 2016) the hero is a woman enslaved to carry the child of one of the leaders of a militant religious group which took over the USA, in a world in which fertility rates went down.
- In “Star Trek” (a long running TV show, first aired in 1966 and with several continuations) a crew of a starship explores unknown worlds and has to fight and overcome hostile alien life forms.
- In “The Time Traveler’s Wife” (a 2003 novel by Audrey Niffenegger, turned into a 2009 movie directed by Robert Schwentke) the hero and his wife need to manage their love when he keeps jumping between time periods with no control.
- In “Akta Manniskor” (from Swedish: “Real Humans”; a Swedish TV series first aired in 2012 and reproduced as an American-British show called “Humans” since 2015) people face all kinds of moral dilemmas when human-like robots become common and serve people, and when a small group of the robots start to develop self-awareness.
- In “Westworld” (a TV series first aired in 2016) human-like robots who were designed to entertain people in a futuristic theme park go through some sort of “malfunction” (later discovered to be pre-planned by the robots’ creators) that causes them to develop self-awareness and try to liberate themselves from the humans. If Truby and Russell describe the humans as the heroes, in “Westworld” the conscious robots are heroes, yet the theme of human evolution still stands as the robots take part in a humane vision and their struggle and story is crucial to human development.
- In “The Hunger Games” (a novel series by Suzanne Collins, first published in 2008, turned into a movie series directed by Garry Ross, starting from 2012) the hero participates in a deadly and cruel reality game designed to provide entertainment for the mass and help authorities oppress the people and preserve power and control.

The examples described above were selected to demonstrate that the range of problems or “disruptions” we can consider as science fiction is quite wide: decrease in global fertility;

encountering aliens; time travel; major technological malfunction; a new, dangerous and highly destructive technology; a technology that can manipulate human memories and/or minds in a big way; robots who begin to possess self-awareness; a major change in social norms, structures and/or politics (as is the case with "Gattaca", "The Handmaid's Tale", "The Hunger Games", many "Black Mirror" episodes and of course George Orwell's "1984") and many more. Science fiction begins when "what if" questions transcend the technological, scientific, and even social norm conventions. It is still not a definition and can be challenged by other examples or even genres with some relation (the supernatural genre, fantasy, superhero etc.), yet it provides a framework that allows creators, marketers, and audience to engage in a discourse surrounding "science fiction" and to study and learn its meanings and creative approaches, decisions, and techniques.

This unifying motive, the technological novelty or scientific twist, is termed by one of the leading science fiction scholars, Darko Suvin (1979), as "Novum". The "Novum" differentiates the story world from the real world. As opposed to magic in the fantasy genre, the Novum is some sort of an innovative idea that follows an acceptable scientific logic of the story world.

2.1.2 Science fiction and the future

So far, the word "future" has not been used to define or describe science fiction. This is because science fiction does not necessarily deal with the future. It can, but it does not have to. "The Handmaid's Tale", the 1966-1967 TV series "The Time Tunnel", Jules Verne's "Twenty Thousand Leugeus Under the Sea" are just quick reminders of thousands of science fiction creations which happen in the era in which the story has been written. There are also science fiction works that happen in the past (not including time travel stories), like Philip K. Dick's "The Man in the High Castle" and the TV series based on it. They all adhere to igniting a story from a technological or scientific "game changer" but take place in a time period the author finds most appropriate to the story, whether it is the far future, the near future, the present, an alternative present or the past. The decision of when to locate the story is an artistic one and actually a "privilege" of the science fiction creator that does not exist in other genres. It is, however, a very important decision that carries a

huge meaning for the metaphoric qualities and the impact of the story, and sometimes to its credibility as well (would anyone have taken "Star Wars" seriously if it had tried to pass as a contemporary story?). The meaning of setting the story's time period will be discussed later as part of the creative process. It goes hand in hand with another creative decision – how different do we want our story world to be from our known world?

2.1.3 Science fiction combines with other genres

Another characteristic of science fiction is that it mostly goes with other genres and creates multiple sub-genres. "Star Trek" is a science fiction journey with some elements of a war story, and can also be described as a "space exploration" sub-genre, with some referring to it as a "space opera"; "Star Wars" is, well, a war story with some other elements, and can also count as a "space opera" (Russell even describes it as more of a fantasy story than science fiction); "Eternal Sunshine of the Spotless Mind" blends so well with drama and love story that many do not even experience it as science fiction, and so on. Science fiction sub-genres can also be defined very differently, with some sub-genre lists describing the type of technology, scientific disruption or "Novum" taking place in the story (space exploration, time-travel, android or human-like stories, utopias, dystopias and so on) and some sub-genre lists are based on the genre combination (like science fiction/thriller, science fiction/love, science fiction/comedy; examples for the latter are the hilarious "Space Balls" from 1987, directed by Mel Brooks, or Douglas Adams' 1979 novel "The Hitchhiker's Guide to the Galaxy" and so on).

Truby divides his genre analysis into "technical genres" and "non-technical genres". "Technical genres" are those whose story beats and structure are relatively "formulistic" and tight, paving a type of story that an audience can more or less expect. "Non-technical genres" are those whose structure is relatively open and can take many forms and storylines, and its central features are comprised more from the existence of certain motives, subjects, and themes. Ironically science fiction is a "non-technical genre", and often (if not always) has to be matched with a "technical genre", such as thriller ("The Matrix"), detective ("Blade Runner", "Altered Carbon"), romantic comedy ("Eternal Sunshine of the Spotless Mind"), myth ("Star Wars") and/or others. Screenwriting teacher

Robert McKee (1997) also describes science fiction as a "meta-genre", which can "entertain" other genres. The combination that science fiction forms with the "technical genre" makes the specific form and structure of the story. Again, in all of its sub-genres, science fiction tells a story about a world different than ours in which a new technology or a scientific twist (which can come from the social sciences as well as from natural sciences) causes a major problem that people have to solve or cope with.

It should be noted that when discussing the definition of science fiction and its characteristics, it was more comfortable for me to turn to the way screenwriters and screenwriting teachers handle it, and not review more academic attempts to define it. This is due to two reasons and purposes:

- The academia (as Adam Roberts and Mendelsohn implied) has failed to accurately define science fiction, and the evolving world of creations keeps challenging and redefining the genre.
- I am a screenwriter, and as such the point of view that helps me most is the one that looks at the genre from the perspective of the creative process, and Russell (a screenwriter himself) and Truby try to offer such a perspective. This is also the more relevant approach when engaging in a "creation-based-research" endeavor, where the concepts and insights emerge from and relate to the creative process.

2.2 The power, the role and the significance of science fiction

Take a few seconds to observe the list of the highest grossing movies in history:

Rank	Title	Lifetime Gross	Year
1	Star Wars: Episode VII - The Force Awakens	$936,662,225	2015
2	Avengers: Endgame	$858,373,000	2019
3	Avatar	$760,507,625	2009
4	Black Panther	$700,059,566	2018
5	Avengers: Infinity War	$678,815,482	2018
6	Titanic	$659,363,944	1997
7	Jurassic World	$652,270,625	2015
8	The Avengers	$623,357,910	2012
9	Star Wars: Episode VIII - The Last Jedi	$620,181,382	2017
10	Incredibles 2	$608,581,744	2018
11	The Lion King	$543,638,043	2019
12	The Dark Knight	$535,234,033	2008
13	Rogue One: A Star Wars Story	$532,177,324	2016
14	Star Wars: Episode IX - The Rise of Skywalker	$513,100,363	2019
15	Beauty and the Beast	$504,014,165	2017

Image 2.1: The top 15 highest grossing movies in history as of February 2020[37]

Among the top 15 successful movies of all times, 6 will be tagged as "science fiction" first, with 5 others borderlining between science fiction and superhero, containing clear science fiction motives so central to their plot that many regard them as science fiction as well (The 'superhero' genre in itself might be questioned as being labeled 'science fiction', since the super powers could be considered more of a fantasy than a technology/twist of nature, yet some movies go a long way to ground the super powers in a scientific context and/or include many other science fiction elements. All the "Marvell" films of the last 20 years do that). It is true that this table tends to highlight recent movies due to inflation in prices, but when adjusting to get a more balanced and time-relative film success, science fiction stays at least as dominant if not more so, with movies like the early "Star Wars", "E.T", "Blade Runner", "Alien", "The Matrix", "The Terminator" and others breaking into top places and leading the most successful films' lists of their time. In Television, nowadays the most successful narrative art form, there is an increasing number of prominent science fiction TV series like "Westworld", "Black Mirror", "Altered Carbon", "Humans", "Stranger Things", "The 100", "The Man in the High Castle", "S.H.I.E.L.D", and others.

[37] Source: https://www.boxofficemojo.com/chart/top_lifetime_gross/?ref_=bo_cso_ac ; Retrieved on February 18, 2020.

Most of them are shows done by cable and Internet companies (like HBO, Netflix, Amazon Prime etc.) but there are some done by large networks. The big break of Television science fiction occurred in this decade, with not only more shows reaching public success but also with a significant development and variety of the sub-genres and themes from the days of mainly space exploration shows like "Star Trek" and "Battlestar Galactica". Today's shows try to blend much more with drama, thriller, and detective and they even tackle social issues.

I will not try to explain why science fiction is such a popular genre in film and TV. It is also not the case for every science fiction work or sub-genre, and it is hard to compare the vast success of "Star Wars" or "Star Trek" to the more artistic presence of "2001: A Space Odyssey", "Black Mirror", "Eternal Sunshine of the Spotless Mind" or "Arrival" (a 2016 movie by director Dennis Villeneuve, based on "Story of your Life", a 1998 short story by Ted Chiang). What I do want to point out is how science fiction has a very strong presence in modern culture, and that this presence justifies examining the metaphorical qualities of science fiction, its meanings, the real-world issues it mirrors, and the psychological aspects of it.

2.2.1 Genre success and society: the case of the 1970's conspiracy wave

Before going into the ways in which science fiction interacts with culture and society, I would like to briefly demonstrate this kind of relation between genre growth and success and society through another genre: the detective-conspiracy-thriller.

In the late 1960's and early 1970's, the United States went through a crisis in the trust the public had towards the government. The Vietnam war and the public criticism it summoned, the licking of reports about the white house knowing the war was a lost cause years before ending it, the Watergate story, and even the assassinations of the Kennedy brothers, Martin Luther King, and others all caused the public to sense that they know little of what high officials are plotting and scheming, and a narrative of distrust and paranoia emerged (Berkowitz, 2006). This feeling has resonated in the rise of an evolved form of

the detective genre – the detective conspiracy thriller. Films like "Chinatown", "Three Days of the Condor", "The French Connection", "The Long Goodbye", "The Parallax View", "The Conversation", and finally "All the President's Men" were made and had received success and presence commercially, artistically, and culturally. All those movies used the basic story form of the detective story: a crime has been committed and the detective sets out to discover the truth. "Discovering the truth" is probably a motive that resonated well in the American public at that time. But those movies added to the detective form some other motives: the truth is illusive and sometimes cannot be known (like in Francis Ford Coppola's 1974 Palme d'Or recipient: "the Conversation"); The villains are most often on "the same side" as the detective-hero, being his countrymen, maybe even part of his own organization or the very same people who hired him for the job, teaching him and the audience to trust no-one; those villains are also usually among those who were appointed or selected to keep the common people safe; the detective-hero is sometimes forced to act, and did not choose to do so, and he is being haunted and turns into a victim himself. All these motives corresponded with the public sentiment of the time.



Image 2.2: The final shot of Francis Ford Coppola's "The Conversation" (1974). Gene Hackman plays Harry Caul, a surveillance expert, turned paranoid believing some unknown powerful people are after him because he thinks he recorded a murder. Out of his paranoia he completely tears up his apartment, looking for microphones. The movie carries many similarities to Antonioni's "Blow Up".[38]

[38] Source: https://www.youtube.com/watch?v=o8-i7lA5gic; Uploaded on June 25, 2013; Retrieved on October 14, 2019.

One could argue that the production of such movies was an intended and conscious endeavor, done by screenwriters and directors who wanted to react to the politics of that time. This is most likely true. Even me, in the series I write for the purpose of this thesis, started consciously from a subject I wanted to explore and say something about, so it is likely that Coppola, Polanski, Pollack, and the others knew they wanted to comment on that reality. However, if the audience would have been indifferent, then that list of movies would have been far shorter. We probably would not have "Chinatown". Coppola, Polanski, Jack Nicholson, and Gene Hackman owe quite a bit of their careers to Richard Nixon.

2.2.2 Science fiction's affect

After demonstrating how genre interacts so tightly with social, political and/or cultural processes, we turn to science fiction. The popularity of science fiction has already been demonstrated earlier in this chapter, and it is an evolving genre which keeps its popularity for a long time. As said, I do not set out to explain why it is successful, but to understand the ways it echoes and interacts with the human experience. Is it important for a writer to understand this? I cannot answer this yet. To be more precise I believe it is crucial for a writer to understand the emotional and thematical significance of the genre he writes in, at least because it embodies the expectations of the crowd, but I do not know if that understanding needs to be explicit and articulated, or if having it in a more intuitive and implicit manner is as good (or better). Part of the reason for me to explore it more explicitly is the fact that this is an academic work. It is important to note that at the time of writing the thesis, the vast majority of the creative work on the series had been done already.

What makes science fiction stories so central in modern day culture? In what way do they serve audience's need for entertainment? What emotions do they evoke and what kind of a mental experience and learning, that is so captivating (when done well, of course), do they offer?

Peter Russell talks about "A fetish for technology" as being the "weed" of the genre. "Weed" is a word Russell uses to emphasize the excitement and the "fun" that a story, and

more generally a genre, offers the audience. After establishing that technology (or the more general term of "Novum") is so important to science fiction, it seems that Russell has a strong point, and science fiction movies, series and novels strongly appeal to the part in people which is infatuated with technology and novelties. The science fiction audience loves to see human-like robots, spaceships crossing the galaxy, people's minds moving from one biological body to another, hovering on a skateboard with jet engines and other kinds of "cool stuff". It is possible to widen this notion a little bit and talk not just about the infatuation with technology, but the entire range of emotions people have around technology that might attract them to read or watch a science fiction piece and hope to feel or maybe even gain insight about. It is a reasonable assumption that people who sleep in front of an "Apple" store to get a place in line for the newest gadget will also buy tickets for the new "Star Wars".

But a fetish for technology, strong as it is, does not tell the whole story of science fiction, and I think not even a small part of it.

John Truby, in his system to define story and genre, uses the term "key question" of a genre to describe the kind of learning that the characters and the audience experience and needs to resolve throughout the story. The key question of science fiction is: "How do you create a better world?" (Secrets of Genre, p.7). If this is the case, that science fiction is an artistic narrative arena (as opposed to an intellectual or political discussion) for figuring out how the world should be, then it can appeal to a collective sentiment of people who are not happy with the way things are. Science fiction stories do not do it all at once – they do not offer a complete vision of the entire world that fixes all of humanity's problems in one story. Each story takes a certain technologically or scientifically based issue and explores it as a tool that reflects a possible dark side of human society and/or a possible growth or evolution of it. "Arrival" and "Story of your Life" on which it is based, use the mysterious appearance of vessels with aliens who use a strange circular language and can see through time to explore the passage from the dark aspect of people fearing the strange (probably the most prominent theme of all alien stories) and unable to communicate between each other, to a brighter vision of taking responsibility of each other and cooperating. The story also conveys an idea that by looking forward in time and understanding the consequences

of decisions we might be able to achieve that. “Blade Runner” tries to explore “a better world” question about the relationship between man and artificial consciousness (which is, of course, a mirror of ourselves, since we created this consciousness in our own image). “Westworld” asks if there is a chance that artificial intelligence could be a better version of ourselves, “Star Wars” tackles tyranny and freedom and the idea that creating a better world must come from a commitment and even duty to fight for freedom; “Altered Carbon” touches on immortality, and so on. Those are all huge subjects, yet they are different from each other and every one of them deals with creating a better world from a different angle. Science fiction stories can also operate through a different strategy, showing only the ugliness and darker aspects and leave the audience contemplating about the dangers of something. For example: the “Black Mirror” episode “Shut up and Dance” tells the story of a young man who is being extorted into robbing a bank and a forced upon “fight to the death” with someone else by being filmed masturbating to child pornography through his computer’s camera. It is a horror-thriller story (again, science fiction mates with other genres) about the loss of privacy and its price (although some could claim that capturing pedophiles, even those who restrict themselves to masturbation, is a good development in society). The story leaves the audience asking themselves weather this is the world we live in or are heading to. “Shut up and Dance” does not offer the solution but warns about the deterioration and by doing so remains in the boundaries of the “creating a better world” question.

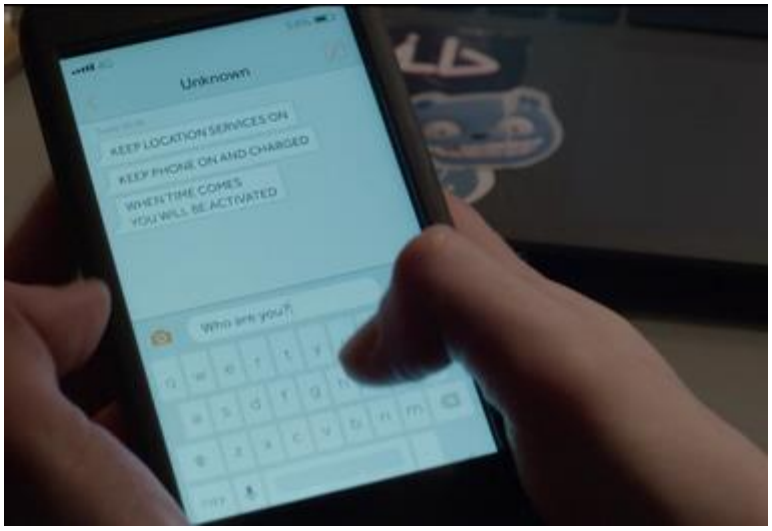


Image 2.3: "Shut up and Dance" episode from "Black Mirror" (Premiered on Netflix on October 21, 2016). Someone recorded the hero, a teenager, masturbating with child pornography and now extorts him and sends him instructions through the phone. The audience never meets the extorter, it is all done through technological devices. Hacking phones and data bases and using them for extortion is not science fiction anymore. [39]

Another "Black Mirror" episode, "San Junipero", takes the opposite strategy and shows a world of optimistic immortality by creating a computerized heaven to which people who are about to die can "move". In this place people can grow, change, be who they really want to be, live in eternal youth if that is what they please, and find love. The digital afterlife is a place with no scarcity of resources. Again, technology drives a story about the "how to create a better world?" question, even if the avenue to get there might surprise the audience.

However, science fiction is a form of story; it is not an essay nor an opinion column. It must attract audiences who seek an emotional and entertaining experience and engage them with the story while constructing an investigation into a "better world" issue. It is not done as a tactic – the science fiction author does not say "I'll grab them with some 'cool technological stuff', a mystery/war story, and when they fail to notice I'll plant a propaganda message" - the story, combined with its artistic and entertaining qualities is the exploration itself. When we watch and enjoy "Star Trek" we emotionally and physically feel the curiosity and fear when the crew of the spaceship "Enterprise" walks on the surface of a new planet, about to find out what kind of alien life form it inhabits, and does not know who they are: are they friendly? Are they stronger and/or more advanced than us? Is there danger for the heroes? etc. Inside that emotional experience lies the meaning. "Tagging" those emotions as the same feelings we might have in face of foreigners from different cultures and races is a blend of explicit interpretation and subconscious psychological processes. Not anyone will infer or transfer those emotions or meanings to the "real life"

[39] Source: http://blog.umd.edu/blackmirrorreflections/2017/11/08/shut-up-and-dance-or-risk-the-consequences/; Retrieved on October 14, 2019.

domain and to accepting diversity, but some might. Yet the experience of watching "Star Trek" remains.

Basically, this is the kind of metaphor that science fiction portrays. If the "detective-conspiracy" movies of the 70's created the feelings revolving around not knowing the truth and being in a state of paranoia, being a metaphor for the politics and reality of that time, science fiction creates a different experience in which the writer and the audience detach themselves from the known world to explore issues through creating new possibilities.

Adam Roberts, in his book: "Science fiction: The New Critical Idiom" (2006) tries to pinpoint what is the metaphorical quality of science fiction. He argues that it is wrong to view or assess science fiction creations as "one to one" metaphors. That might turn the writer's work to a technical ongoing comparison between what he/she wants to reflect on in the real world into the created world. The result will be more of a puzzle for the audience than a story, probably without too much fun or excitement. It would be trying to overstretch a parable.

To better understand the kind of metaphor that science fictions creates, Roberts is building on two concepts – Suvin's "cognitive estrangement" and Paul Ricoeur's "distanciation". Suvin defined science fiction as:

> "A literary genre or verbal construct whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main device is an imaginative framework alternative to the author's empirical environment" (Suvin, "Metanorphoses of Science fiction: On the Poetics and History of a Literary Genre", 1979, p.37)

Although Roberts manages to demonstrate that this definition is not complete (and this is why it was not mentioned in the previous chapter), it does offer a lead into the kind of creation science fiction is – the term of "cognitive estrangement" suggests that creating a distance world, clearly perceived as different from our own, is very important to the experience the genre offers.

Roberts refers to Paul Ricoeur and his take on metaphor (Ricoeur did not refer specifically to science fiction) with his use of the term "distanciation":

> "For our purposes, we can take Ricoeur's "distanciation' as the imaginative space that opens up between the lives we live in London or Chicago (or wherever we happen to live) and the lives we live in 'Lord of the Rings' or 'Dune'. It is because SF is both poetic and speculative that it is proper to think of it as metaphoric, in this strong, Ricoeurian way." (Roberts, 2006, p.146)

According to Roberts, the metaphorical strength of science fiction is created from the story taking place in a different world and that the story world is open to many possibilities. The author can (and should) use it simultaneously to explore his/her speculations and create a vision of symbols and poetics. Many of us asked ourselves as children: "what is the perfect place we want to live in?" or "how would a perfect world look like?". Those questions ignite our minds and imagination to new constructs, ideas, and possibilities (the speculative part) and/or beautiful images which reflect our wishes, dreams and fears of what the world can be (the poetic part). It is a humane world, but it is not the one we know. Of course, as a story, science fiction cannot be simply and solely a utopia and just portray the perfect world, first because it will be boring and nearly emotionless (a story is built from its conflict), and secondly because it wants to show the road to having this better world. This is the difference between science fiction and a virtual world like "second life" or an article someone writes about how he/she would like the world to be.

Interestingly, when many past scholars wanted to portray their utopian visions, they chose to do so not as a non-fiction composition but rather as a novel (Edward Bellamy's "Looking Backward: 1887-2000", 1888; William Morris' "News from Nowhere", 1890; Theodor Herzl's "Altneuland", 1902, in which he imagined the future Jewish state and is considered one of the most important founding texts of the state of Israel). They chose so, even when that was the only time they ever wrote fiction, most likely because presenting their utopian vision by creating empathy to a character and his struggles is a much more engaging, exciting, and maybe even an effective way to convey their utopian ideas.

Much of the metaphorical quality I related to science fiction is shared with the Fantasy genre. There are similarities between the two genres; however, science fiction differs from fantasy by the "novum" – the science fictional world is based, as mentioned, on technology or scientific twist, and hence it tries to deliver a scientifically acceptable world (even when

the science is not reliable), while fantasy abandons realism completely and bases itself on magic.

2.2.3 Science fiction as criticism

An even "edgier" view about science fiction is offered by Carl Freedman. In his book "Critical Theory and Science fiction" (2000) he compares the creation and the basics of science fiction to the foundations of critical theory as a whole. Critical theory, he says, is based on the gap between the reality of the world and the perception of it. The critical theorist uncovers the structures by which people and societies organize themselves, perceive the world and form meanings, and then he inspects those structures, questions them and makes room for other concepts to replace them. Science fiction does the exact same thing – it shows a different world and that which arises out of it causes us to look past and/or through the formulation of our world and consider other "arrangements".

This might be the reason why Margaret Hartley claimed in 1953 that science fiction is a "subversive genre". In her article Hartley claims that the patriotic congressional committees who censor and regulate content from being "communist" or disloyal overlook science fiction because they do not regard stories about aliens or imaginary technologies as dealing with real world ideologies, and that they are wrong about it. She claims that writers can use science fiction to disguise their ideas and criticism by placing them in the future or in other worlds.

The best movie to exemplify the idea of science fiction as a critical genre might be "The Matrix".



Image 2.4: Keanu Reeves is Neo in "The Matrix" (Directed by the Wachowski brothers, 1999). In this scene Neo reaches the ultimate recognition that the matrix is a computer programmed whole-world simulation to which the minds of all people are connected. When he accepts the simulation for what it is, he can do almost whatever he wants in it, such as stopping bullets in the air.[40]

"The Matrix" is a modern cave parable regarding a character "waking up" from living in a simulated world created for humans by aliens who use the people's bodies as an energy source. Neo, the hero, is given a choice between continuing his life "inside the matrix", meaning preferring living in a fabricated world, or leaving it and going to the real and truthful world. Choosing the matrix has its advantages of convenience and safety, but it means never being truly free. Choosing the real world has considerable dangers, among which is being haunted by the creators of the matrix, but also the opportunity to know the truth and ultimately manipulate the simulation at will. The entire story can be perceived as a metaphor for many things, among which is viewing reality as not more than a simulation, or a perceptual prison we live in or maybe even a place made for ourselves (this is how Roberts interprets it). Building on this metaphor – once you know that the world is fabricated you can free yourself from it or grow above it, being stronger and more powerful than before.

The Matrix stands as an appropriate point of conclusion for this chapter, because it can serve as a metaphor for the entire science fiction genre. By creating stories that take place

[40] Source: https://www.theverge.com/2017/3/16/14944236/the-matrix-reboot-remake-mythology-stories-animatrix; Retrieved on October 14, 2019.

in alternative realities of the certain kind that we discussed, the creators of science fiction try to deliver an essence that their audience seek: playing with options, revealing a better way to live, detaching ourselves for a short while from our own world, and turning it into not more than one suggestion, among many more.

2.3 The unique aspects of science fiction writing

> "Science fiction presents to a writer challenges and problems that cannot be found in other forms of fiction. In addition to all the usual problems of writing, science fiction stories must also have strong and believable scientific or technical background. Isaac Asimov often declared that writing science fiction was more difficult than any other kind of writing. He should have known; He wrote everything from mysteries to learned tomes on the bible and Shakespeare." (From "The Craft of Writing Science Fiction that Sells, Ben Bova, 2016, p.16)

The entire previous chapter could be read as portraying the difficult challenge of the science fiction writer. Of course, it is not "science fiction" that explores the question of "how to create a better world" and walk the viewer or the reader through an experience in which he is captivated into a transcendent world that changes his perception of how the entire world could be. It is not the genre, but it is the stories. And someone has to write them.

As discussed earlier, science fiction stories are, first and above all, stories. This means that the science fiction writer has to master the art and craft of creating a good story. Those stories will not be discussed here due to their overly broad and generic nature yet will be presented when relevant in the 3rd section about the creative process. Beyond those there are challenges, skills, considerations, and characteristics which are either unique to writing science fiction or at least more important or handled differently when writing a science fiction story. In order to build an argument about science fiction writing in this thesis, it is important to review the literature that exists about the genre. This would be the professional and academic arena this thesis seeks to provide a contribution to.

This chapter will identify the major recurring points (meaning considerations, techniques, norms, tropes, questions, decisions etc.) about writing science fiction from the relatively

more well-known existing sources. The selected sources will include: John Truby's "Secrets of Genre" booklet and "Science fiction" audio class; Peter Russell's "Science fiction" webinar; Orson Scott Card's "How to Write Science fiction & Fantasy" (1990) and his chapters in "Writing Fantasy & Science fiction" (2013; Orson Scott Card is one of the most prominent science fiction writers of today and probably all time, best known for "Ender's Game" and the "Ender" series); Adam Roberts' "Writing Science fiction and Fantasy" (2014); Ben Bova's "The Craft of Writing Science fiction that Sells" (2016; Ben Bove is another well-known Science fiction author).

The major points about writing a science fiction story which will be discussed are:

- The science fiction premise, or why does the story need to be a science fiction one
- Building the story world
- Setting the technology (or "novum") and weaving it into the story

2.3.1 The science fiction premise

Earlier it was explained how science fiction almost always interconnects with other genres. This challenges the writer to justify that his story is best told as science fiction rather than in the companion genre. Orson Scott Card raises such a question when referring to the space travel sub-genre:

> "Why would a story need space travel at all?" (Scott Card, 2013, p.37).

A writer of science fiction needs to know the answer.

If, for example, a writer wrote a story about a war between two planets, using futuristic weapons, we might ask would the story be any less good if it was about a war which takes place in current or past days, using current or past weapons. Does setting the story in the future and in a trans-galactic world add some sort of added value? Truby (2009) says that the "desire line" (what the hero goes to achieve) of a science fiction story is "To deal with the tools of a world". Russell claims that in science fiction technology creates the story problem. So according to both, in science fiction the story's premise needs to have a very clear connection with the "novum", the technological/scientific "change maker" of the

story, in a way that the story could not have been told without it. If in “Blade Runner” the hero, Rick Deckard, instead of chasing a dangerous self-conscious android had chased a vengeful slave – it would have been a different story, deprived of its meaning; In “Eternal Sunshine of the Spotless Mind” we could not replace the hero’s inner self-fighting to keep the memories of his loved one from being erased with any other non-technological instrument; Would “Avatar” be the same story if Jake Sully could not switch into a Na’vi body and experience the Na’vi life in its fullest?; The goal of the story needs to be tightly linked with the “novum”.

The question remains, however, as to whether this is a rule. This can be tested by coming up with a story that could be told as science fiction but also as other genres. We will continue with the war story and portray it as about a commander who tries to compensate for the loss of some of his soldiers in a previous battle, so he takes too few risks and maybe protects his men but endangers the entire cause and possibly the lives of other soldiers from his army and ultimately the freedom and survival of his side. As a science fiction story, we could have imagined it occurring in a war between planets, with his unit sent on a mission to destroy the enemy’s headquarters and perhaps kill the wise opposite commander. But we can also picture this story taking place in every violent conflict happening today or in the past, even as a mob story. Will it be a bad choice to tell it as science fiction? Not necessarily (Yet, if I was a producer presented with this story, I would certainly question if the higher science fiction budget is worthwhile). Is it really the best way to “squeeze” the potential of science fiction? I believe this not to be so.

The question gets more complicated when referring to “Star Wars”, which is in part a war movie that takes place in an intergalactic futuristic world. Does the “novum” really give an added value to the movie? The box office provides a strong claim that it does. However some might say it does not, and Russell, in his webinar about science fiction, actually says that “Star Wars” is not science fiction but rather a fantasy: the most important “novum” of the story, the thing that ultimately is the “tool” that decides the battle and that the major characters want to learn how to use and control, is “The Force”, which is more of a magical capability than a technology or a scientific twist. However, it is very difficult to rule out “Star Wars” from being science fiction, so having the storyline derived and linked with the

"novum" is a strong guideline to making your science fiction story better and more "loyal", or better manifest the genre, yet not a rule. Specifically, in "Star Wars" there is some technological tool that causes the problem – the "Death Star", which is a mass destruction weapon of magnitude that has never been seen before. It brings about the theme of the morality of technological gaps, a theme worthwhile of a science fiction story. We might replace the "Death Star" somehow with an earthlier version, like the nuclear bomb. But maybe the "Death Star" is a parable for nuclear weapons? Remembering that "Star Wars" was conceived in the late 1970's, when the cold war was still happening (and with Ronald Reagan elected president and leading a "hawky" policy against the soviet nuclear threat) this assumption is not that farfetched. So, a science fiction story might sometimes be told in another genre, but it is recommended to create a storyline that binds closely with the technology or science that distanciates from our known world. Even if the premise can be told in other genres, there should be some reason or meaning to locate it in a science fictional world. Distancing ourselves from our known world and commenting about it through either a metaphor or an analogy to real phenomena might be not the best method, but it is a good enough story strategy for science fiction.

Another point about the premise of a science fiction story is made by Ben Bove, who called science fiction "a literature of ideas", and elaborates on this using the term "The Thematic Novel":

> "My dear friend Gordy Dickson calls such works – 'thematic novels', meaning novels that have a strong point of view, which the author wants to impart to the reader... I believe science fiction should encourage people to think. God knows we have enough forms of amusement that discourage or actively prevent rational thought... I regard these thematic novels as true explorations, where the author and the reader investigate a certain concept or group of ideas, examine a mindset, look at the world that might actually come into being within the lifetime of the reader" (Bova, 2016, p.256-257).

What Bova says can be viewed as an expectation, maybe his own, and not necessarily as a rule or principle for science fiction premises. It is certainly possible to write science fiction

that is mainly commercial and aimed at entertainment and emotional reaction. Moreover, in all genres a writer can, might or should aspire to write a story that provokes thinking. Is science fiction unique in that regard? I believe that it is. A science fiction story should deal with serious social, psychological, and moral issues that are relevant for today's life or will be soon. It is the prime justification for creating the different world: when the writer presents a "novum", he provokes the audience's thoughts, imaginations, questions and fears about it and must be responsible for treating those with respect. Adam Roberts highlights this argument and gives it flesh by connecting it to the relationship between people and technology:

> "One of the ways science fiction works is by mediating the tech revolution that has determined human life for the last couple of centuries... Tech makes our lives richer, but it also generates anxiety – when the mere thought of leaving the house without having your mobile phone with you gives you heart palpitations, then you know something's wrong. Tech makes us anxious because we do not understand it; we fear what it can do when it goes wrong because it reveals our inadequacies and magnifies our secret phobias. Tech in SF stories will resonate most potently if it connects with this anxiety" (Roberts, 2006, p.109-110)

So, the writer of science fiction will do a better job, more loyal to the true potential of the genre, if he/she properly develops the moral, psychological and social meanings and implications of his story (as previously mentioned, this is true for EVERY writer, but in science fiction it is much more eminent to the genre and to the decision to write in a differentiated world). This "imperative" comes with risks, however:

> "The danger of the thematic novel is that it can slide into propaganda." (Bova, 2016, p.257)

To avoid that Bova suggests 2 techniques:

> "First, do your own thinking. Never sit down to write a story that represents an existing political position... Second, eschew the pleasure of creating a villain." (Bova, 2016, p.257)

To conclude, the challenge of a story idea or premise in science fiction has some unique qualities that the writer should address: It should include a clear "novum"; it should be well enough justified to tell the story as science fiction; it should, from the beginning of the development, manifest an awareness and maybe even focus on the thematic aspect and potential of the idea.

2.3.2 Building the story world

This is the most unique writing challenge for the science fiction writer. There is a story world in every story – every story takes place somewhere – but the creation of the story world in science fiction (but also in Fantasy, although it is a little different) is unique and demands unique considerations and decisions not like any other genre. This is because, by definition, science fiction is a genre that takes place in a different world. Writers in most genres can rely on their life experience or good research to provide their story with a suitable setting or environment and make it believable and detailed enough. The science fiction writer cannot do that; he never lived or experienced the world he is writing about because that world never existed (only, maybe, in his mind). One piece of advice writers receives from professors and writing professionals is "write about what you know". If that was to be widely accepted, we might never have science fiction. It is true that in science fiction there are also elements which originated from the personal experience and the "real world" of the writer, but all in all the story world will always contain at least one "novum" that changes it completely and makes it significantly different:

> "In other forms of fiction, the writer must create believable characters and set them in conflict to generate an interesting story. In science fiction the writer must do all this and much more. Where in the universe is the story set? Is it even in our universe? Are we in the future or the distant past? Is there a planet under our feet or are we dangling in zero gravity?" (Bova, 2016, p.19)

For many science fiction consumers, the story world is part of the experience of the story. They want to learn about the geography, creatures, technology, establishment, history, economics, politics, living structures, architecture, cultures, era/time, and more. They are

also likely to criticize the world they read or view if it is not coherent enough, or for many other reasons. There are numerous problems, challenges, and considerations identified by Truby, Roberts, Bova and Card, that the writer needs to address:

- Originality: Since the story world is so essential to the science fiction story and even evaluated as part of the merits of the creation, it can be viewed as part of the story itself. Hence, the writer needs to be aware of repeating the same worlds or worn out settings that have already been written and come up with something new.

  > "Every good science fiction story must present to the reader a world that no one has ever seen before." (Bova, 2016, p.19)

  > "What separates the best hard-SF writers from the run-of-the-mill ones is the fact that while the ordinary guys usually invent the scenery of their created world and maybe work up a good evolutionary track for the life forms there, they then resort to clichés for everything else. Characters, societies, events – are all taken straight out of everything else they've ever read. That's why formulas are resorted to so often" (Scott Card, 2013, p.60)

- Recognizability: Truby warns that one of the biggest hazards of writing science fiction is that the story world will be too strange or distant so the audience will have a hard time relating to it and might experience the story in a too intellectual manner. The technique he offers is "create a recognizable world so the viewer does not have a clinical, or intellectual, relationship to it". Creating a world that the audience will simultaneously be curious and astonished by and feel comfortable enough in to allow the story to be at the front is a complicated task. The writer does that by making decisions about the balance between the familiar and the unfamiliar elements of the story world; the way the structures, themes or processes of the story world resemble or remind the audience existing concepts (for example concepts such as the desire for power, clash of classes etc. will echo as familiar); the time period in which the story takes place, and more. One strategy of achieving this is to set the story in a world resembling ours and change one crucial thing which serves as the story's "novum" and its ramifications in all kinds of life domains. For example, in "the Handmaid's Tale" the story takes place in an alternate reality in

which fertility is declining (the decrease of birth rates is a true thing happening in the Eastern world). That "novum" leads to many social consequences, such as an extreme religious group taking over the USA, enslaving fertile women, and more. Of course it is possible to use a strategy of designing a world with greater differences, but then there is bigger risk of having the audience confused or mentally giving too much attention to "taking in" all the differences and understand how this world works, which might hinder the emotional connection to the story. However, it is not impossible, but the writer needs to come up with mechanisms that will provide it. For example: in the TV series "Altered Carbon", which takes place roughly 350 years in the future, there are quite a lot technological novelties, some are very drastic (with the prime "novum" of minds being able to move between different "sleeves" – bodies, and even inhabit artificial bodies). It is not any less good artistically than stories created with a "singular novum" strategy. If any, it might even offer a more wonderous world and probably a more reliable one (it is absurd to believe that over 350 years only one technology will seriously evolve) – but it does require the writer to solve some of the "bombing" of new technologies and many novelties. In "Altered Carbon" they used the "fish out of the water" strategy, where the hero himself is "resleeved", or put into a new body, 300 years after "dying", so he begins to explore the new and strange world along with the audience. Setting other elements of the story, such as the mystery or the goal of the character or creating strong empathy to the character and/or getting the story moving early, becomes more important when telling the story in an extremely odd world. Another TV show that offers an interesting technique is "Westworld", where the story takes place in a very different future with major technological advances (robots have become human-like and some even begin to grow consciousness), but the arena of the story is a theme park that recreates the scenery and culture of the Wild West, a more recognizable "view" for the audience.

- Rules, details, credibility, and coherence: the writer needs to decide the rules that hold the world he created "together" and make it coherent.

  "So far, world creation sounds like a marvelous free-for-all, in which you come up with all kinds of ideas, ask 'why' and 'how' and 'what result' a lot,

and when there is a really big pile of good stuff, you sit down and write. I wish it were that easy. But that pile of neat ideas is just that – a pile, shapeless, chaotic. Before you can tell a meaningful story, you have to hone and sharpen your understanding of the world, and that begins with the fundamental rules, the natural laws." (Scott Card, 2013, p.36)

A habit of some science fiction fans is to dissect stories for their credibility and reveal "holes" or "illogical" things about the story and its world. This might be interpreted as having the story world "obey" the laws of nature. Bova even directs writers to "feel free to invent any new device, to make any new scientific discoveries that you can imagine – providing they do not contradict what is known about science today" (Bova, 2016, p.64). However, there are certainly successful and maybe even good science fiction stories in which there are very dubious scientific occurrences, such as time travel, traveling faster than the speed of light, being able to physically exist in many places in space, and even fire from explosions in space, something that happens all the time despite the fact that it is physically impossible since there is not enough oxygen. Audiences can accept all those if the writer created a consistent story world in terms of its rules and did not "go too far" without providing sufficient explanations. Rules and details are true not only for nature, but also for social, economic, and political systems and the history of the world. Scott Card suggests the science fiction writer should "invent the past" of the story:

"Worlds do not spring out of nothing. However things are now, they used to be another way, and somehow they got from there to here" (Scott Card, 1990, p.49)

If, for example, in "The Handmaid's Tale" the structuring of the Gilead cult governance or the understanding of the process and circumstances that led them to power had been sloppy, it would have hurt the power and credibility of the story. The science fiction writer, who must invent all that, is challenged much more than a writer who tells a story about our world or the past.

- Exposition or revealing the world: Exposition in a story means providing the audience with the information it needs to understand and fully experience the story. A banal example: Romeo and Juliet's story would not be interesting if the audience didn't know that the Montague and the Capulet families are rivals; in order to

understand the story of "Blade Runner", learning about the Voight-Kampff test that differentiates humans from androids and even to know some of its content (which charges several scenes with tension) is a must. In science fiction this is a very delicate and necessary job – how to inform the audience with the necessary knowledge about the world, the technology, the social systems, the religions, the economics, the geography, and so on and so on, so they could understand the events and the meanings of the story and that the pace and engagement in the story would not hurt? Bova provides some advice on the matter: providing only background which is necessary; not trying to explain how machinery works, just showing what it does. There might be other techniques, like using a character who does not know and have the audience learn with him/her, planting background in a way which serves the action in a scene, placing information only when the story gets to a point in which it is logical to learn about it (yet risking some confusion or information gaps earlier – which with the right setting might contribute to the mystery), using the "show do not tell" principle and dramatizing the information etc. An example for dramatizing information can come from "Altered Carbon", where the existence of religious people who are against "resleeving" (returning after death in a new body) are presented as the family of the leading female role who becomes herself in conflict about "resleeving". In general, most of these techniques are not specific for science fiction, but they are in heavy use in the genre because of the big challenge of conveying the details of the world, the technology etc. As imaginative and as professional the writer is, that is how his solutions to the problem will be better.

2.3.3 Setting the technology (or "novum") and weaving it into the story

Most of the writing issues surrounding the new technology or scientific twist that the story relies on has been outlined in the previous points: how it serves as a cornerstone for the premise; how it creates potential for the story; and how being part of the story world it needs to be reliable, coherent, detailed and controlled for how much distance it creates from

the known world. But since it is so important to the science fiction story, it "deserves" some extra reference on its own.

Inventing new technologies or scientific oddities can be part of the fun of writing science fiction, but Roberts gives a warning about over-loading the reader with it:

> "Do not splurge. You may be terribly excited by all the intricate knobs, flywheels and flashing lights of your item of imagined technology. That's nothing to be ashamed of. But your reader is more interested in what the item of imagined technology does and means, not how it works" (Roberts, 2006, p.106)

A rough and common distinction between types of science fiction stories that Roberts indicates is between "Hard" and "Soft" science fiction. "Hard science fiction" gets into the science and the technology in much more depth and detail, focuses more on the natural sciences, and sometimes the technology and science are not only triggering the story but take a major role in the artistic experience. "Soft science fiction" deals much less with the technology and the science, uses them more as context to get into the drama, and might focus more on issues related to the social sciences. This distinction, inaccurate as it may be (for instance, most of the cyberpunk sub-genre being "soft" or "hard" could be questioned), does demonstrate that there is a range of possibilities to position the technology and the science in the story and many ways to realize it, and the writer has to decide the way he/she wants to position the technology in his story. This is a decision that will influence the tone and the experience of the audience.

There are other aspects of conceiving the technology of the story world, many of which will be discussed in the third part of the thesis. The subject of human enhancement summons decisions such as: what human enhancement technology to use? Implants, genetics or biochemistry? Or perhaps some or all? In how much detail to go into the science? and so on.

The next two chapters can be read as a "prelude" to the 3rd section of the work, which will describe the creative process. The next section tries to review the major creations that dealt with human enhancement, and the later one reviews some prominent TV series from the

last decade that resemble or serve as inspiration or sources for learning for my screenplay and the recent TV landscape to which my series wants to join.

2.4 Human enhancement in science fiction

My choice in this project was to write about human enhancement technologies and their (prospective) rise. This will not be the first work about the subject, so my duty as both a writer and a researcher (and a writer-researcher) is to know what preceded my attempt to create a story about the subject. The goals of such inquiry are to learn if the subject has developed sub-genre characteristics and to have a good knowledge of how it has been dealt with so to be able to use it, but not repeat it.

Several novels, movies and TV series have dealt with human enhancement technologies. Some of the more known of them are:

- Beggars in Spain (A novel, by Nancy Kress, 1993)
- Upgrade (A movie, directed by Leigh Whannell, 2018)
- Limitless (A movie, directed by Neil burger, 2011)
- Limitless (TV series, created by Leslie Dixon, aired 2015-2016)
- Lucy (A movie, directed by Luc Besson, 2014)
- Years and Years (TV series, created by Russell Davies, 2019)
- Odd John (A novel, by Olaf Stapeldon, 1935)
- Flowers for Algernon (A short story, by Daniel Keyes, 1959)

2.4.1 Can the superhero genre count as dealing with human enhancement?

Before reviewing the above-mentioned stories and how they approached the subject of human enhancement, it is important to note that elements of this exist in many other stories. The superhero genre, for instance, can be considered as dealing with human enhancement. The basic situation of the superhero genre is of a person who possesses special abilities or gains them throughout the story. The genre, which evolved and perhaps keeps evolving in

popular culture, has dealt with many questions and nuances of this situation: the duty of the person with super powers – the dilemma of serving the public against caring for his own necessities ("Superman" and the vast majority of superhero stories deal with this issue); the superhero's estrangement from and ambivalent relationship with society, even society's view of the superhero as unwanted (most of the "X-Men" series; "Heroes"; "The Dark Knight"); the struggle of the superhero gaining or learning to adapt to his superpowers and the pains and fears it might cause ("Jessica Jones"); and the misuse of super powers for immoral intentions ("The Avengers: Infinity War"; "Heroes"). Those are all themes that could be important in the discussion about human enhancement. However, superhero stories are simply not human enhancement stories. I make that claim decisively, yet explaining and justifying it involves several arguments:

- One of the major differences is that the Superhero is usually born this way, his powers are innate, and he did not intentionally work or strive to turn himself from a "regular" person to a super-person. In human enhancement, the enhanced abilities are a result of deliberate scientific and technological endeavor. The meaning of this difference is crucial – a superhero is special, and "I" (or every person) am not a superhero and never will be, but an enhanced person – this I might be, if I take the pill/get an implant/merge with some technology etc., and if not me then my children (through some genetic manipulation) or my grandchildren could be. Being a superhero is a fantasy, being enhanced is a goal. This is a completely different point of view. One of the exceptions from the superhero genre is Iron-Man, who is strength relies on the technology he uses. However, Iron-Man is less of a human enhancement story because he was designed to have unmatched resources that separate him from regular people, and also because of the next point.
- Superheroes represent a power that is external to the general human society; a force, nearly god-like, that can come and rescue the regular people and the community. They are loners, carrying the responsibility (and sometimes even burden) to use their powers in the right way on their own. Human enhancement is a completely different story – the enhanced abilities are a product of society and a purposeful design, with the number of people who can enjoy them theoretically unlimited.

- Superpowers can be based on magic, out-of-this-world factors, or on a very freakish scientific occurrence, not grounded all that well in real science. Human enhancement stories, as liberal with their use of science as they may be, will provide a more reasonable scientific background to the enhanced abilities. Most of them build on some of the current familiar technologies that are already talked about as potentially enhancing, and provide an explanation using reasonably acceptable scientific knowledge.

When reviewing the human enhancement stories I have selected, I will pay attention mainly to the following questions:

- How did they set up the "novum" – the technology? How does it serve the story?
- What are the themes that the story fleshes out? How is it dealt with? How is the theme connected to the technology?
- Are there storytelling strategies and techniques that align well with the "novum" and the themes? What choices did the writer make on the main science fiction issues?

2.4.2 "Beggars in Spain"

Nancy Kress' novel from 1993 takes place in the years 2008-2091. Genetic engineering has advanced and can, among other interventions, produce babies that do not need to sleep. When the "sleepless" grow up they are discovered to have much higher cognitive abilities than regular people, use the nights to learn and grow their skills, and later it is even realized that they are significantly healthier, hardly grow old, and there is a chance they could even be immortal. The hero (at least in the first part) is Leisha Camden, a sleepless who is born in2008 and has a twin "regular" sister. She grows up, discovers that she is different from her sister, extensively groomed by her father, and later connects with the handful of sleepless teenagers realizing that they ought to be in each other's social group because of the hardship to make real connections with those who are not sleepless. Leisha quickly dedicates herself to help and mentor other sleepless kids. When the sleepless become adults, they use their abilities to start companies that are the major force of the economy.

Slowly a class system emerges, with the sleepless becoming a target for hatred from some groups of "regulars", and at the same time there is dependence on their economical contribution. Among the sleepless arises a conflict about their obligation to serve the entire humanity or to separate themselves. Another sleepless establishes "sanctuary Inc.", a colony for the sleepless which is also the hub for most of the sleepless business. Leisha is among the sleepless who do not go the colony and believes the sleepless should be integrated into the general society. Because of massive taxation, the leader of "Sanctuary Inc." decides to detach themselves from the USA, and even build the colony as a spaceship that leaves earth and hovers around it – yet still maintains business connections. In the colony, out of fear from the earth's governments trying to control the colony, they develop the next generation of sleepless, which possess even superior intelligence. When a critical conflict between earth and the colony occurs the leaders of the colony plan to detonate several nuclear bombs on earth – and the group of enhanced sleepless children raised in the colony manages to thwart their plan.

The novel is built from 4 novelettes which were published at different times, so the structure of the novel is made of 4 serial stories, taking place in different time periods.

What can be learned from "Beggars in Spain"?

- The major "novum" is a genetical engineering of embryos, which does not change their entire genetics but manipulates one quality – removing the need for sleep. It is unknown at the time of the process what will be its fullest consequences for the long term, yet because it is considered safe enough, some parents who are exposed to the option and can afford it are willing to take the chance.
- The choice of using genetical engineering determines several things: it is something that can be done and sounds logical (the book was published in 1993, while the mapping of the human genome was in its course and ended in the late 1990's); it differentiates between people – the sleepless are not the same as the others and this biological difference cannot be denied nor reversed. There are attempts to emulate the sleepless gene and manipulate regular people to become sleepless, but those attempts fail (explained by the necessary interaction with all the sleepless child's growth process from embryo to adult).

- The use of genetical engineering also yields the notion of "evolution by design", meaning it is the human species who can make decisions about its DNA and alter it, artificially speeding the course of evolution and transcending natural selection. The book is a dramatic exploration into possible ways in which humanity might handle itself when such enhancement is available, the moral and social questions it will raise, and maybe society's moral readiness for it (as opposed to the technological readiness, which might come sooner rather than later).
- There are some other new technologies or scientific discoveries, mainly related to energy sources, communication and information technologies, and others, with the space colony of the sleepless being one of them (in the 4th book) and they take part in the story (especially when the time of the story advances), but mostly in a "background" kind of way, enough to provide credibility for the advancement happening over time, justifying the sleepless' contribution to development, but it does not capture the mainline of the story.
- Later, when I review the next story examples, it will be shown that in many cases the human enhancement technology or "novum" presented in the story is dangerous or contains risks (this will be demonstrated later in the thesis). "Beggars in Spain" is an exception. It is true that when the sleepless genetic manipulation began it was not known what its long-term consequences will be, but overall it turned out to be a wonderful thing – more productivity, more intelligence, more health, long lasting youth, maybe even immortality. All the conflict and problems it created were all social. This is a very interesting choice that influences the story and the theme– it makes room for the story to thematically focus on what it wants to focus on, hence the social and moral issues.
- Throughout the four books there is one recurrent theme that evolves: the relationship between the sleepless (the superiors) and the regulars. The theme is explored on various levels – from the personal, familial (starting with Leisha's relationship with her sister and father), romantic, social, economic, and political – passing through a class system in which the sleepless are the "higher" class in a way, yet responsible for the economics of the others, even somewhat exploited, on to creating a separation ("Sanctuary Inc.") and even arriving to the brink of a very

deadly war. The question surrounding the main theme is whether there is a possibility for an equal relationship between the superiors and the rest of humanity? What is the responsibility of the superiors? Are they held responsible to the rest even when treated badly, just because they have higher abilities?

- In the story, the conflict between the enhanced and the regulars is on its way to a deadly result, where it becomes evident that the regulars do not stand a chance compared to the superiors' abilities and the technology of the enhanced. Is this Kress' assumption of how enhancement influences society? The ones who "save the day" are the next step of enhanced; those who were raised by the enhanced to be their successors and better versions. They stop and destroy those who created them and avoid further damage. Analogically to the theme, this ending suggests that the only way to restrict the potential damages of enhancement is by even better enhancement, and that ultimately the faith of a society that tampers with enhancement lies with the morality of the enhanced.
- In general, most of the interactions and relationships between the sleepless and the regulars in the novel on all levels suffer and face grave problems. It seems that the only time it works, for example in the later years when Leisha and her sister (and her sister's family, and other characters joining them) reach a sort of "co-existence", is not all ideal and happiness, but a level of acceptance of the place and essence of each of them. Perhaps the thematic conclusion that one can take from it is that when human diversity widens through enhancement, the way to keep a sustainable system is by accepting that the differences exist and not confront them.
- Another bold attempt in the novel is to capture the mindset and the mind of the sleepless, entering their emotions and thinking process. This is mainly achieved through the character of Miri, Leisha's niece, who is the first of the enhanced sleepless (the next generation) who is born and grows up in the space colony, and later the leader of the group that rebels against the colony's leaders and prevents mass murder of regulars on earth. She is portrayed as odd looking, stuttering, intelligent in a way that has never been seen before, and she develops unique thinking processes and telepathic communication with her peers.

> “The terminal was in sight position only: they practiced reading. The problem was ‘doll:plastic – baby:?’. Miri said, ‘it is my turn’, and typed ‘god’. The terminal presented sullen face. “Incorrect”, said Joan, with a certain degree of satisfaction. ‘yyyyeeesss ittt isss…’ said Miri, troubled. ‘The tttterminal is wrrronnng’. ‘I suppose you know better than the terminal!’. ‘ggggoddd is the cccorrect answer’, insisted Miri. ‘ittt’s four strings down’.” (“Beggars in Spain”, translated back to English from the Hebrew edition, p.236)

The character of Miri, a very young child at the time, invents a complete logical system based on a concept of “strings” that symbolize patterns of relations between concepts. Nancy Kress makes a very bold attempt to describe the thinking process and inner language of a person with super intelligence. This is a challenge that can be characteristic of writing a human enhancement story, when trying to reliably portray the mind and being of someone who is enhanced. Not doing so and giving enhanced characters the same level of performance that we would encounter from a regular smart person, can be unreliable. Writing a very intelligent character is, therefore, one of the requirements of dealing with enhancement stories (when the enhancement is about strengthening intelligence). On top of that, trying to “enter” the mind and the psychological world of someone enhanced could be one of the themes of human enhancement stories.

- The structure of “Beggars in Spain” with its 4 books that are spread over almost a century, provides the story with a scope that enables it to demonstrate the evolution of its theme. It chronicles the development of the sleepless community, the social processes that derive from the rise of the sleepless (the emergence of a class system, conflicts between sleepless and regulars etc.), the growing conflict inside the sleepless community about blending in with regulars and the responsibility for humanity, and also the long term personal relationship and commitment of the characters.
- The possible downside of the structure are the “jumps” between times that interfere with the flow of the story (this is, of course, a personal opinion). Leisha, who is the clear protagonist of the first book loses some of her presence later on when her motivations and position regarding the theme slightly fixates and her growth and

struggle lose some energy. It can be explained and accepted when remembering that the novel is made of 4 novelettes.

"Beggars in Spain" is one of the "purest" human enhancement stories and a prime example of dealing with the subject. As such it provides reference, ideas and inspiration to the way the technology of human enhancement can be presented and the themes and issues it can explore.

2.4.3 "Limitless"

"Limitless" is both a movie from 2011 (directed by Neil burger) and a TV series which is based on the concept of the film (which might even be considered a sequel) and aired for one season in 2015-2016. Leslie Dixon is the screenwriter of the movie and the creator of the series. Because the two share the exact same "novum" and take place in more or less the same world I will refer to them together. There are differences, of course, that derive from one being a movie and the other a TV series (movies tell a more direct, beginning-middle-ending story in which the hero's problems and change process gets resolved, and in a TV series the story is much longer, the hero changing very little if any, and the problems that set the story going hardly get resolved).

The "Limitless" movie tells the story of Eddie Morra (played by Bradley Cooper), a struggling and out-of-luck author facing writer's block whose girlfriend leaves him for his lack of progress. He comes to possess a nootropic pill called "NZT" and when taking it he gets amazing cognitive abilities and makes astonishing progress with his book to the delight of his publisher. The pill has a short-term influence, so Eddie manages to acquire some more and uses the strength he gains to earn a significant amount of money on the stock exchange and wins his girlfriend back. Eddie's adventures get him into trouble with a Russian mobster who learns about the pill and pressures Eddie to keep supplying him with it. He then gets into more trouble with the law and with others who pursue the drug, and also his health begins to deteriorate due to the side effects of the drug. Eddie manages to pull out of his difficulties by making a "deal with the devil" – he keeps his success and is

about to run for senate and serve there as a doer of a powerful man who supplies him with NZT and has also managed to produce an antidote for the drug's side effects.

The series tells a very similar story, with the protagonist being a failed musician (again, an artist) called Brian Finch. He is also introduced by chance to NZT and takes it, which makes him smart in an unbelievable way. He gets involved in helping the FBI to solve crimes. He learns that people who used NZT begin to suffer horrible medical problems after a while and die. He is then covertly approached by no other than the already US senator Eddie Morra, who gives him a shot that immunizes him from the hazards of NZT. Morra promises Brian to keep giving him the shots on a monthly basis so he can keep taking NZT risk-free, as long as Brian does assignments for him. His main assignment is to continue working with the FBI (who discovers that Brian takes NZT but think his tolerance to the side effects is natural and rare) and wait for future instructions. From that point the sole season of the series is mostly episodic, meaning that in every episode there is a mystery case that Brian, as a sort of detective with elevated brain powers, manages to solve. There are some long-term storylines, like Brian's relationship with his father, his female FBI partner, and a slow progression of the mysterious involvement of Eddie Morra with Brian, which is not really solved or explained during the season (a 2nd season has not been released to the day of writing this thesis).

What can be learned from "Limitless"?

- The technology of human enhancement is biochemical – the NZT drug. It comes in the shape of a transparent pill. The NZT strongly resonates real life substances from the group of nootropics, such as Modafinil (which has been covered in the 1st section of the thesis). It also builds its scientific background on the veteran (yet scientifically nonsense) idea that we use only 10% of our brain power and that NZT creates much better connectivity between synapses so that the brain can be used to its fullest potential. The way it is shaped in the story, NZT helps its user to remember everything, connect everything, make new learning fast, and control cognitive processes.

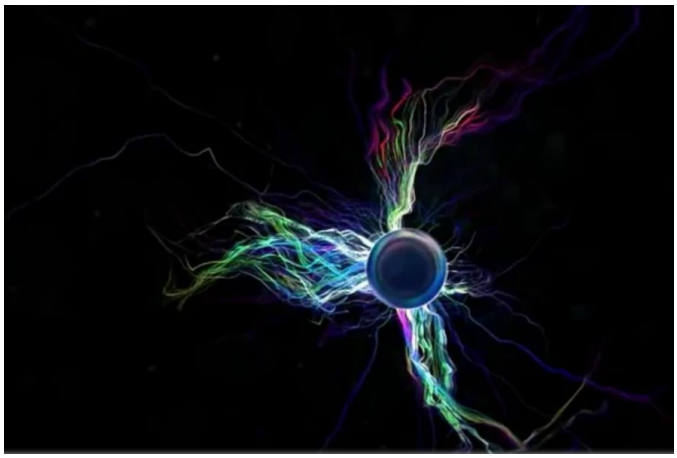


Image 2.6: the image is taken from the "Limitless" series and shows what happens in the brain of the hero when he takes the NZT pill. It is of course not that scientifically grounded, but the image tries to give the viewers the impression that it is a thing of science. [41]

- The NZT pill and the experience of taking it are portrayed as a modern fantasy -a dream relevant to our extremely demanding, competitive, and achievement-oriented life coming true. I can assume that a great deal of the appeal of "Limitless" works on that fantasy of an easy fix that can give way to material success. This is why, at least in the film, the drug is coveted by many characters. The film grossed over 160 million dollars in the box office, upon a budget of 27 million dollars[42] , so if my assumption is correct this fantasy has an appeal.
- The film and the series happen in the present. They use the strategy of changing only one thing compared to the world we know – the "novum" or the use of the drug. This strategy works in making the audience not only recognize the world and spend less time figuring it out, but also ground the fantasy that this NZT drug might be a real thing. By setting it up in the known and present world it resonates with the feeling of pressure the audience feels about the world (and established by creating a "loser hero" the audience can empathize with in both the movie and the series) so we, the audience, feel the need to get a drug like that ourselves. As noted in section 1 – the ad campaigns for the movie begun with fake advertisements for NZT.

[41] Source: https://limitlesscbs.fandom.com/wiki/NZT-48; Retrieved on June 20, 2019.
[42] Source: https://www.boxofficemojo.com/title/tt1219289/?ref_=bo_se_r_1. Retrieved on February 18, 2020.

- Another attribute of the "novum" is the danger that hides in it – the addiction, and worse – the health risks of using NZT that could be deadly (this is especially highlighted in the series). The scientific explanation for the side effects is very scarce and designed maybe to be explored later in the series. The dangers of using NZT can be viewed on two levels:
    a. As a dramatic tool – after experiencing the "high" of the drug and wanting to keep having it, the side effects provide a serious problem for the hero that motivates action. It also facilitates the creation of a power relationship (there is a cure to the problem, and the one who holds the cure has control over the hero). Without the danger of using the drug, the story could have been uninteresting, as the hero (and maybe many other people) would have used the drug and succeeded in everything they did. This is more important in the series, which needs to maintain the drama for a long time, and this is probably why the writers made the side effects in the series much more serious.
    b. From a thematic point of view – having NZT coming with harsh side effects might suggest that when it comes to Enhancement there are "no free meals". It reminds us that human enhancement is not all positive and exciting, and a road to fulfilling your dreams, but rather there are (or might be) prices to pay.



Image 2.7: Senator Eddie Morra (Bradley Cooper), the original protagonist of the "Limitless" movie, gives Brian Finch (Jake McDoorman) the antidote injections against the NZT's deadly side effects. By doing so Morra gains control over Finch and can operate him. [43]

[43] Source: https://10play.com.au/limitless/articles/what-is-the-end-game-of-limitless/tpa190615pjckf; Retrieved on October 14, 2019.

- The movie and the series deal very little with social and moral issues revolving around human enhancement (if at all). The character of Eddie Morra is planning to run for the Senate at the end of the movie, but out of pure utilitarianism. In the series his character is already a senator who is about to run for president, but his motivations are unclear - it is not evident what ideology he promotes (if any) and his actions seem legally questionable. It might be that this story layout is in itself some sort of a moral statement about the ability of enhanced people to easily reach high political positions without representing real issues, but most of the movie and the series does not elaborate on that issue, and there is little to no consideration of the moral and social implications that human enhancement might raise.
- A thematic conclusion that can be made from the movie and the series is related to the appeal of the drug. I cannot be sure that it is intended by the writers, but in both cases the hero cannot cope with the world successfully without the use of the drug. This is to an extent a sad insight into our competitive, pressuring world – that it is so hard to do well in it, fulfill our dreams and be happy with who we are, and that we strongly desire a drug to help us and enhance us.

2.4.4 "Lucy"

"Lucy" is Luc Besson's hit movie from 2014 (which grossed 458 million dollars on a 40-million-dollar budget[44]) starring Scarlet Johansson as Lucy, an American student living in Taipei and forced to work as a drug smuggler. After a kick in the stomach, a bag full of a new type of drug called CPH4 raptures inside her. The drug enters her blood and she gains unbelievable cognitive and physical abilities, including telepathy, telekinesis, no sense of pain, perfect recollection of memories and superior learning and deduction abilities and even the ability to mentally see through time. She escapes her captives, realizes the drug will possibly kill her and tries to locate the other drug mules, but also contacts a professor

[44] Suorce: https://www.boxofficemojo.com/release/rl1902151169/?landingModalImageUrl=https%3A%2F%2Fm.media-amazon.com%2Fimages%2FG%2F01%2FIMDbPro%2Fimages%2Fhome%2FwelcomeToBomojov2._CB1571421611_.png; Retrieved on June 18, 2019.

who might help her. She manages to help the French police to arrest the drug gang, and at the end, after taking all the bags of CPH4, her body turns into a black material that merges with computers and makes them into supercomputers. Her mind "moves" to exist in a special dimension where she can control matter, energy and time, leave her physical body and exist as a consciousness that is everywhere. She can also go back in time to learn about the origins of humanity, where she meets "Lucy" (the name given to the remains of a woman that were found in Ethiopia and considered to be the first human on earth) and observes the 'big bang'.

What can be learned from "Lucy"?

- Similar to "Limitless", there is a good chance that the fantasy of gaining super abilities fuels this film's appeal and success. It is a fantasy built on the perception of the drug being something that the audience can accept as potentially real and something they might be able to do. The strength of this wish helped "Limitless" and "Lucy" succeed commercially. It is the sentiment that drives many students, as talked about in section 1, to use Modafinil and other nootropics, and drives biohackers to research ways to make their bodies and minds "better".
- The design of the technology or the "novum" (the CPH4 drug) resembles "Limitless"' NZT. They are both biochemical substances which have an almost instant affect. The affect is similar too – although Luc Besson makes his drug even more powerful. In both cases the drug is related to illegal trafficking (which provides storyline opportunities, but also adds to the "there are no free rides" theme of human enhancement stories). Both drugs are also very dangerous and possibly deadly. To provide the illusion of scientific validity the film presents the character of a professor (Morgan Freeman) whose specialty is the theory of humans only using 10% of their brain power. Throughout the movie Lucy's "Brain usage" increases with more CPH4 she gets and consumes.
- Like in "Limitless", "Lucy" happens in the present and the existence of the drug is almost the sole "novum" that differentiates its world from the known world. Later in the movie Lucy's growing abilities make her do things that are also unknown to us (such as the ability to move in time in her mind, telekinesis and telepathy), but

those are all derivatives of her process and not natural parts of the world. Setting the story in the known world with a limited "novum" helps the flow and pace of the story (not much explaining and exposition) and as said with "Limitless", strengthens the feasibility of the drug.

- "Lucy" and "Limitless" (movie + series) tell a story structure resembling Aladin's template: A hero of lower status comes across a magical instrument (or genie) that gives him powers or wishes coming true, enjoys the resulting overnight rise to success, fights opponents who want the magical instrument to themselves, and ultimately wins. By the end the hero most often still holds the superpowers, usually after doing something that proves him worthy of it. In "Limitless" and "Lucy" there are slightly different variations of the template (in the series, which is a longer story, it is hard to maintain the same template): Lucy reaches a state which can be interpreted as maybe death or maybe transcending into a "higher" being, and Eddie Mora makes a morally dubious decision to hold on to his abilities. Another difference from the template is that NZT and CPH4 are presented as a more feasible option, not as pure magic.
- Luc Besson tries in "Lucy" to do something similar to what Nancy Kress tried in "Beggars in Spain", which is to offer a vision into the mind of someone with unimaginable intelligence and to imagine it. They are both asking the question – in what way will a super-intelligent person be different? What will occupy his mind (or her in both stories)? Kress' Miri develops a unique logical system. Besson's Lucy is suddenly motivated to understand the meaning of existence (and she does it in a way the audience cannot easily understand) and learns how to use her brain to control matter and energy, until she gets to a point in which she becomes a consciousness that does not need the body and can exist in everything or everywhere. In both cases the enhanced heroin has some thoughts or insights that are extremely difficult, and maybe even impossible to understand by regular people (and even the audience).



Image 2.8: Lucy, after disappearing from being a human being, uses a phone to inform the professor that she is "everywhere". I chose this image instead of the visually more interesting image of Lucy transforming herself into a black flexible matter, because of the god-like meaning of the message she sends. [45]

- As Lucy becomes more potent, she kills many people. Most of them are the 'bad guys', so the audience does not cry for them, or in another case she causes a huge car accident in which most likely people die or are at least injured – but the audience is not exposed to the pain. Lucy does not bother about it and goes on with her mission – which reveals the need to get all the CPH4 and further enhance her brain so she could understand more. Is it telling us some meaning about the enhanced not caring for regular people and being "selfish"? Yet the "selfishness" is not about gaining money or power; it is about discovering what the full potential of what she can become is. This, for her, is more important than people's lives, than her parents' grief of losing her and so on. She is ruthless.

The last point mentioned corresponds with "Lucy" considered by one source to be a film that manifests Transhumanistic philosophy. In an article from 2015[46] (the author is not identified by name) it is claimed that "Lucy" is based on Luciferian philosophy ("Lucy"… Lucifer…). Luciferianism talks about the possibility of humans to reach divinity or god-like status by means of their own creation, hence people can raise themselves to the level of gods with the use of technology. This is what happens to Lucy. This goes very close to

[45] Source: https://vigilantcitizen.com/moviesandtv/lucy-movie-luciferian-philosophy/; Retrieved on June 20, 2019.
[46] Source: https://vigilantcitizen.com/moviesandtv/lucy-movie-luciferian-philosophy/; Published on February 13, 2015. Retrieved on October 14, 2019.

one of the meanings of Transhumanism discussed previously – that the human race is capable of enhancing itself and that it is a worthy cause.

2.4.5 "Upgrade"

This 2018 Australian action-horror-science fiction movie, directed by Leigh Whannell, refreshes the human enhancement technologies the previous stories told and presents an implant that connects the brain and the body to advanced Artificial Intelligence. The story is about Grey Trace, a guy whose wife is murdered in front of him and he is left paralyzed from the neck down. Coping with depression and loss of meaning to his life, he is approached by Eron, a technology billionaire who developed a chip called STEM that can be implanted in Grey and restore his physical abilities. The condition is that Gray will hide the treatment and the fact he can walk again. Gray can walk again, and also discovers that STEM contains an Artificial Intelligence being with which he can communicate. Grey sets off to find the people who ambushed him and killed his wife. He gets into fights along the way and lets STEM take over his body and perform high-level martial arts that Grey has not learned – and kills many of the gang. The leader, however, also seem to be a cyborg with technology that makes him equal to Grey/STEM and harder to defeat. As Grey closes in on the leader, Eron demands Grey stop investigating, and nearly shuts down STEM from a distance. Grey reaches the gang's leader who tells him he was hired to kill Grey's wife and leave him paralyzed, so he could be implanted and enhanced. Gray suspects Eron and comes to confront him. In the final battle Eron tells Grey that STEM grew a mind of its own, needs a human body to control, and that STEM was the one behind the whole conspiracy. However, it is too late – STEM gains complete control over Grey's body, kills Eron, and also the police investigator who tried to solve Grey's wife's murder, and sends Grey's original consciousness into a dream like dimension where he joins the image of his wife.

What can be learned from "Upgrade"?

- "Upgrade" describes a "near future" story but relatively a distant "near future", where many transportation and communication technologies that are not fully

developed or in common use today are already in wide-spread use (such as autonomous cars). Even though most of those technologies are talked about today or even in some stages of development, they are relatively known by the audience. That is basically what "near future" means and the experience it creates – it enables "cool stuff" to be shown off but without burdening the viewer with too many "getting used to" or have to make too much effort to understand what everything is. It does, however, create a stronger sense of distanciation than "Limitless" or "Lucy", positioning the world of "Upgrade" as not our own, meaning we perceive the story as more of "what might be" that warns us or gives us a chance to not accept its themes or prepare for the problems it presents.

- Usually when the world is stranger and further, there needs to be some sort of dramatic compensation that grabs the viewers. In "Upgrade" it is the hero's grave tragedy and the emergence of the need for revenge, gathered with a strong mystery of both "whodunit" and "why done it".
- The coupling of a very strong, tragic desire line for the hero and a cyberpunk near future world with many novelties compared to ours, give the movie a comic-myth like tone that can be found in superhero stories. Yet, the hero is not a superhero, he does not save humanity, and his abilities are implanted rather than naturally part of him.
- The major "novum" is designed differently from what has been covered so far in human enhancement stories. It is an implant that can take control of the body, has a being and a voice of its own (that only the person who has it can hear) and it does give the hero extra ability. In this case the enhanced abilities are physical, and at the beginning it is even presented as a positive medical advancement – restoring paralyzed people's ability to walk and perform (as discussed in section 1, medical uses are a domain in which human enhancement technologies are developed and considered legitimate, but this work provides the potential for other than medical uses later). Opposed to many of the prior reviewed stories, in "Upgrade" the enhancement is not of cognitive abilities directly – but it actually is in an indirect way, because the communication with STEM gives the hero a lot of information, knowledge, and a "thinking assistant" he would not have on his own. All those are

"ego-dystonic", meaning the person (the hero) does not experience it as being himself but rather as a separate external entity (even if existing within him), sometimes with its own values, that communicates with him.

- Designing such a technology is crucial to the story. It makes the technology a character by itself, and as later discovered this character is actually the story's antagonist and the hidden force that operates against the hero.
- This design also raises a thematical-metaphoric issue: this device is created by man, placed within the human body by choice, gains the "trust" of man by serving him for a while, but it is actually the destruction of man. As seen in most human enhancement stories, human enhancement technology is dangerous. However, this operates in the story as more of a metaphor than an evolving and explored theme – the artificial intelligence being makes the scheme, the scheme is hidden and shockingly revealed at the end (which does carry a strong impact, at least in my experience) and the AI being wins. There are no discussions, dilemmas, decisions, conflicts etc. that give volume to the issue of enabling a thinking machine to take a hold in our bodies and minds. Perhaps some other hero, after the first time his AI controlled body kills someone (and brutally so), might have been shocked and struggle with this surprising mind partner, feeling guilty for letting it do that, but Grey hardly thinks of it. Every act of violence done by STEM through Grey's body is somewhat justified or serves Grey's need for revenge. Plot-wise it can be explained as wanting to keep the final surprise as a surprise. Thematically it can be said that man's short-term benefit (and/or Grey's need for revenge) outweighs the more serious moral thinking. But this moral thinking is exactly what is not evident enough in this story, and one that the story's premise did make possible.
- As with "Lucy", once enhanced, the hero of "Upgrade" becomes a ruthless killing machine that will do everything to achieve his selfish goal.



Image 2.9: Grey Trace lets STEM take over his body and very skillfully and very brutally kills one of the gang members who killed his wife. Are enhanced people presumed to be violent to achieve their goals? Is having a partnering artificial consciousness inside you that can take over your body and do what you cannot do a way to excuse yourself from responsibility for violence?[47]

2.4.6 "Years and Years"

A British mini-series created by Russell Davies and jointly produced by the BBC and HBO, aired in 2019. "Years and Years" does not place human enhancement at its center, but rather the entire near future of Great Britain and the world, and tells the story of one family's members during 11-15 years (most of the series time line goes to 2030, with a short sequence "jumping forward" to 2034 at the end). While covering the family's story the series shows technological, political, social, and economic developments as they make the way life is.

The issue of human enhancement is told through the story of Bethany, the teenage daughter of the family. She approaches her parents, and in a "stepping out of the closet" style tells them she wants to be "trans". Her parents accept this with love and understanding, until she clarifies: "*I don't want to be transsexual. I want to be transhumanist*", and explains she wants to leave her biological body and "*exist forever as data*". This is more than her parents can swallow and her mother sends her to her room, banning her from using the Internet. Bethany's story does not end there. In later episodes she transplants a phone into herself, goes through an extensive government-paid implant surgery that gives her the ability to

[47] Source: https://www.slashfilm.com/tag/upgrade/; Retrieved on June 20, 2019.

connect to endless data, hack all kinds of systems from afar and control them with her thought, keep track of her contacts, and even open doors and cause electric power failures. After the surgery she tells her parents that with the chip in her brain enabling her to absorb almost all the data in the world, she feels joy. By the end of the series a different character (Bethany's dying aunt) is one of the first to go through an experimental process of having her memories and mind "downloaded" while her physical body is about to die. Cleverly it is not known if the download will really preserve her consciousness and "self".



Image 2.10: She is not miming; she actually implanted the smartphone to her hand. Bethany in "Years and Years". [48]

What can be learned from "Years and Years"?

- The approach to the "novum" is very different – it is not one technology that makes the difference, it is showing the entire world changing with different technologies alongside many other processes (politics, economy, refugees, crime, real estate, and many other issues). It gives the series a feeling of it playing out in a very real world, because like in the real world many things develop or change, some in relation to each other (the series shows how the USA nuclear attack on a Chinese island later leads to the collapse of the middle class around the world and the taking over of

[48] Source: https://www.stylist.co.uk/life/bbc-years-and-years-episode-5-review-recap-penultimate-explained/272284; Retrieved on July 13, 2019.

different European countries by extreme right or extreme left political movements). It is an attempt to show a complete world system through the story of one family.

- Another interesting decision in that regard is having everything keep changing – new technologies emerge throughout the series; global and social processes are dynamic, and things keep changing.
- Human enhancement is not the main "novum" like in most of the other creations in this chapter, but rather one of the things that happen. It is more referred to as "transhumanism" than human enhancement and is portrayed as a fetish of some people to integrate with technology. Those who go through such a procedure gain new abilities and sensations, but they are not turning into a completely new species nor exhibiting overwhelming superiority to others.
- The "transhumanism" implants are very expensive, but in the series the state is prepared to finance it for some people, like Bethany. As a result, the technology embedded in the people is considered government property, hence the people who go through it are "owned by the government". However, this specific point is not developed in the case of the character of Bethany, who is not asked to do something special for the government nor facing a convincing conflict regarding this point. It is also not explained why the state is willing to finance the procedure. Interestingly, the idea of the state paying for or subsidizing enhancement exists in the philosophical literature about enhancement, made by Bostrom (2003, 2009) and Hughes (2004). Has "Years and Years" been directly influenced by the transhumanism scholars?
- The focus in the series is about the characters and how their lives and relationships are influenced by what goes on in the world. However, as a personal remark, it sometimes feels as if the characters serve to exemplify some theoretical idea about the consequences of technologies and processes. For example, Bethany spies on her father with her technological abilities and finds out an awful discovery about him – which seems to yield the impact of how these abilities demolish discretion. This is a storytelling hazard in many science fiction stories.
- Another danger that the "world-wide novum" or "everything changes" approach of the series raises is the potential overload of changes, technologies and

consequences. To deal with that a story needs to have a very strong "spinal cord". The characters and their stories, each having a constant obsession, serve to balance this – sometimes with more success but sometimes with less, and the series might sometimes feel slightly cartoonish or like a presentation of all kinds of future predictions. This is of course my own impression.

- The series tells the story of the near future. The characters are the same age as the audience, start in almost the same world as ours, and progresses from there. There is something to be learned from that about the attempt to tell a science fiction story that deals with social processes and tries to show how "real people" might cope with changes in technology – if this is the goal of the storyteller, it is better to tell this story in the near future or in a more known world. Setting a story with a strong emphasis on personal drama and social processes in the far future or in a very distant and estranged world might enlarge the risk of having the audience not really care about it and perceive those as not more than an allegory. The "fact" that there is the government of the universe controlled by a cruel empire is the basis of a good story, but in itself it does not immediately cause us to think about our society. But showing the rise of a political party with no clear ideology or platform that will happen roughly in 2028 is something we can imagine happening in our lifetime.

"Years and Years" is one of the first TV series to address transhumanism as an integral part of the drama and provides an attempt to tell a personal story in an "ecosystem" of changes from all kinds.

2.4.7 "Odd John: A Story Between Jest and Earnest"

This is a novel by Olaf Stapeldon published in 1935 in the UK. The novel tells the life story of John, a "superhuman", from his birth to his death at age 23. His story is told from the point of view of a friend of the family, a journalist, who accompanied and witnessed most of John's life. John is born with an intelligence that is far beyond regular people. From the very early age of 6, John can learn almost everything fast and master any skill he sets his mind to. His physical development is slow, his outside appearance is strange and even considered repulsing, but he makes up for it with other skills he develops.

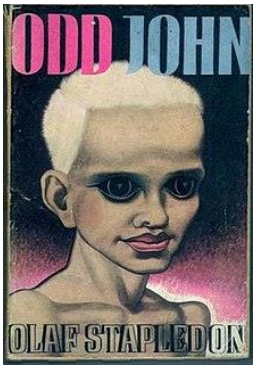


Image 2.11: The cover of "Odd John". The drawing tries to portray the grotesque physical appearance of John, the superhuman.[49]

By the age of 10 he commits a series of burglaries and 2 murders, later invents patents that makes him and his family rich, and masters persuasion skills that get him to influence or seduce whoever he wants. He also lives by himself in the wilderness and goes through other extraordinary ventures. In his late teens he makes telepathic contact with a handful of other young superhumans (he also contacts some superhumans who already died) and establishes a colony for them on a south pacific island, after killing all the island's native residents. The purpose of the colony is to live away from humans, but the colony is revealed and attacked, until John and his partners decide to destroy the colony and kill themselves.

"Odd John" is not purely a story about enhancement. John is not enhanced but a genetic mutation. It is even hinted that there might be a family genetics origin, when John makes contact with a distant relative who "is like me", but is considered a mad man who does not communicate and plays weird music on his flute (music that nobody but John seems to apprehend or enjoy). Yet, "Odd John", one of the first stories about superhumans, is relevant to the discussion about enhancement because it tells the story of the experience of an individual who is equipped with extremely higher intelligence from a realistic point of view (except for the "novum" of having a person being born with such abilities). In the novel Stapeldon coins the term "Homo Superior" for the first time. The novel is even somewhat predictive of War World II, when the character of John analyzes in length the

[49] Source: https://www.abebooks.com/Odd-John-Stapledon-W-Olaf-Methuen/22773046054/bd; Retrieved on February 18, 2020.

hopelessness of humanity and its desperate regression to violence and extreme right-wing ideologies whenever it fails to cope with changes and progression.

What can be learned from “Odd John”?

- The “novum” is a freakish genetic mutation that causes John to grow up with an amazing intelligence level, not a human-made technology.
- Throughout the novel, told from the eyes of a “normal” person, it is emphasized that regular people cannot understand John. This gap is growing bigger as John matures, and the narrator cannot completely understand his motives, let alone the way John perceives and interprets the world.
- Misunderstood by his surroundings, John is doomed to loneliness among regular people. Even in his sexual relationship it is clear from the beginning that there could not be a normal connection.
- The few “normal” people John becomes close to, the narrator, a childhood friend, a girl he gets involved with – all feel obsession towards him, partly because he exercises attraction manipulations over them. The narrator describes his and the others’ feelings towards John as if they were his dogs and he was their master. The narrator assumes that this is also the way John views them.
- Combining all the previous points raises the issue of the “Homo Superior”’s inability to be an equal part of the human society. He might feel like he cannot make any deep and equal connection, regular people will not be able to understand him, and this will result in estrangement and solitude at best, and a violent conflict at worst. This is evident in the story by John and his fellow superhumans killing the island’s natives. Conferring from this story to the issue of human enhancement in storytelling, it emphasizes the potential danger and split between the enhanced and the non-enhanced, with the two “sapiens kinds” unable to exist as equals.
- Among the stories covered in this chapter, “Odd john” gives the largest attention to the attempt of understanding the unique thinking and inner life of a person with superior intelligence. The result, however, is always reserved due to the narrator’s stand that he cannot fully understand John. Basically, it describes John’s disappointment and critique from humanity, his strong urge to achieve deeper

understanding of everything (an understanding which is always not fully explained, because it is beyond the human mind's ability to grasp) and the emotions related to his inner solitude.

- A major structural technique used in "Odd John" is the narrator-protagonist – having a "normal" person telling a story about a "super-normal" person. This narrator is not an objective outsider but has a personal relationship with John. This structure can create an analogy by which the narrator represents the entire humanity, and that his inability to understand John and his complicated feelings (amazed by John, shocked by him, entertained, feels inferior and so on) are the author's way to point to humanity's limitations, misunderstandings, and inferiority. This choice works best when the story manages to evoke the same emotions in the reader – that he/she is curious and intrigued about John, shocked by him or shaken by the events and his actions (like killing), and sometimes frustrated by not being able to understand him through his "mediator" – the narrator.
- One important element that can be learned is the emphasis on the relationship between regular people and enhanced people.
- The themes of "Odd John" and "Beggars in Spain" have much in common: both emphasize and examine the relationship between the regular people and the enhanced. Another motive which is common in both stories is the foundation of a "colony" in which the super-persons can live by themselves.
- Using the genre of a life story gives a chance to go in-depth into the life and personality of the character of the super-person. This choice of genre also comes with some cost – in a life story such as this the conflict is not condensed, and the flow of the story can be tempered. This is dealt with to an extent by providing a foreshadowing to the end of the story – the narrator reveals right from the start that John will die at the age of 23, and the readers are expecting to find out how this ending occurs.

2.4.8 “Flowers for Algernon”

Daniel Keyes short story which got published 1959, rewritten and published as a novel in 1966, tells the story of Charlie Gordon, a mentally retarded man who wants to become smarter and is selected to participate in an experimental surgery that is supposed to triple his IQ of 68. The experiment has been carried out on a few animals before, with only one, a mouse called Algernon, seeming to maintain his acquired intelligence. Over the course of a few weeks, Charlie gains high intelligence, learns languages, reads books on many subjects to the point of becoming highly knowledgeable of them, and even surpasses the researchers who conduct the experiment on him in his understanding of it. Unfortunately, after viewing Algernon undergoing a mental deterioration, Charlie realizes it is unavoidable that he will lose his intelligence as well, and so he does.

Throughout the story Charlie’s experiences touch on several themes related to being smart: Charlie is ridiculed at first for his dumbness, but he does not understand it; Later, when becoming smarter, he is feared and almost all around him evade him; the greatest joy he finds while becoming smart is learning and gaining knowledge, reading books, and enjoying music. After all that happened to him, from the beginning to the end, Charlie still regards intelligence as a desired value. However, losing some of the awareness he had to what happened to him is somewhat of a bliss that helps him retain an optimistic outlook.

The story is told in the first person, through a series of “progress reports” written by Charlie.

What can be learned from “Flowers for Algernon”?

- The “novum” of the story is pure human enhancement: a scientific experiment designed to triple the intelligence level of its subjects. Differently from “Beggars in Spain” or “Odd John” it is not innate (either because of a genetic mutation or genetic manipulation). It is also not biochemical as with “Lucy” or “Limitless”. From the previous stories mentioned the design of the enhancement technology here is similar to the one in “Upgrade”, both being the product of a surgery, but with a major difference: in “Upgrade” the protagonist hosts a superintelligence within him and his own mind is separated from it, and in “Flowers for Algernon” it

is the protagonist's own mind which is enhanced and he remains a singular mental entity.

- The technology presented here is not just going through a procedure, it includes a period of training as well.
- Another property of the "novum" in this story is its "ticking bomb" – the revelation that the newly acquired intelligence is temporary and that Charlie will lose it. The idea that the cognitive enhancement technology (or human enhancement in general) contains eminent dangers both provides a storytelling technique and contributes to the theme:
  - People pursue bettering themselves despite the dangers.
  - Charlie knows the result might be temporary, but the strength of the promise to be smart is greater than his fears of the risk (a decision like that tells a lot about the character – even though he is portrayed as someone who probably does not understand the risk).
  - The risk creates the potential for the later drama, and actualizing it creates the heart of the drama. The procedure being potentially risky and the danger of losing the acquired intelligence are the "gun in the first act" of the story.
  - It contributes to the overall perception that enhancement is a risky business to be very cautious about.
- Telling the story in the first person and portraying a protagonist that holds a strong desire to be smart from the beginning, makes the part of the story when Charline is still intelligent but knows he is about to lose it as very effective emotionally and tragic. These techniques create a strong empathy for the protagonist. It is a story about having and losing the thing you value most.
- The story does not explore the reality of being extremely smart or superior to much extent. Charlie, who starts off as simple-minded, reaches a level of a relatively "normal genius" who can be a better researcher in the field he works, but he is not someone who reaches or demonstrates a mind far beyond current human boundaries. He also becomes a genius for a short while and does not have time for the story to explore the world of an enhanced person, or the world with enhanced people. In this sense "Flowers for Algernon" differs from many of the other

creations mentioned here, which explore what it means to be a genius, how a super-mind experiences the world and how it interacts and maybe changes the world much more.

- As with “Beggars in Spain” and “Odd John”, Charlie’s intelligence also comes with a social price. The idea of either enhanced or higher intelligence causing a distance between who holds them and the “regular” people, is a returning motive in most of the stories about human enhancement.

2.4.9 Common characteristics and motives of stories about human enhancement

Are human enhancement stories evolving as a sub-genre? It looks like not. In fact, calling them again and again “human enhancement stories” is probably not accurate and premature of me. They are more stories that deal with human enhancement technologies. They differ too much between them: take place in different times, involve entire societies or focus on one major protagonist, have different tones and mate with different genres. Maybe “Limitless” (the movie) and “Lucy” resemble each other slightly more in terms of story structure than the others, but two does not make a sub-genre.

The stories with a human enhancement “novum” that I cover do “teach” a lot about dealing with the subject. First, they set up the technology as coveted, as an answer to human needs and desires, and the “coolness” and appeal of the technology is also what captures the audience. At the same time they usually plant a “bomb” in the technology, setting it up as very risky, and sometimes hide the risk until a later time of the story – so that the hero at first does not make a knowledgeable choice about using it, maybe even displaying recklessness with using it before realizing what it might do (is it saying something about humans and their quickness to adopt technologies that are not fully understood? Will this happen with human enhancement?). In the story in which the technology is designed as only good and beneficial on its own, “Beggars in Spain”, it might have been done on purpose to “make room” and devote much more attention to the social consequences of human enhancement.

Second, most of the stories are set in a world quite close to our own world. There is no "Star Trek" or "Altered Carbon" that go far in the future and present a totally changed environment. This can have several reasons or purposes, such as the sense that human enhancement is a social and moral issue that lies on our doorstep and that the story should limit the "estrangement" so that social implications will be better served, or it could be the lack of knowledge and imagination as to what distant human enhancement might be. The point in time when there are individuals who are enhanced while others are "regular" is probably more interesting dramatically and carries more moral questions about how this issue will evolve – Will anyone get to be enhanced? Will the enhanced part themselves from the regular humans? What will become of the regular humans?

Third, there is a unique challenge in having a "normal human" writer trying to create a cognitively enhanced character. Being cognitively enhanced is not an experience that the writer ever had (even if he is smart). Depending on the level of enhancement talked about, the writer must come up and convey to the audience the thoughts, actions and emotions of such a character. There can be several solutions to this challenge, yet it must be met. In "Beggars in Spain", "Odd John" and "Lucy" the writers explicitly present scenes in which enhanced characters "do their thing", which is different or at another level than what normal people can do or understand. Some other solutions could be "compressing" a complex reasoning process into a short time ("Limitless" does it a lot), showing a character learning something new and complicated quickly, recalls small details from memory and more. Writing about the emotions of an enhanced person is harder the more the enhancement is significant. Are his emotions the same? Does his better understanding of the world change his emotions? Making characters with limited enhancement makes it easier to tell their story since we assume that they are basically still human and can have relatable feelings like anger, sadness, happiness, boredom, need for revenge, wishes of success, generosity etc.

Forth, when trying to sum up what stories that deal with human enhancement offer the world in terms of theme and meaning, several issues emerge:

- Human enhancement, in general, is something to be cautious about. It might be risky. We do not fully understand what it can do and how it will affect us both

personally and socially. In all the stories there is either implicit or explicit fear regarding its consequences – from a personal hazard ("Limitless" and in a way "Flowers for Algernon"), through social risks ("Beggars in Spain") and even risks of losing ourselves to machines ("Upgrade").

- There is a very important question about the ability of the enhanced and the regulars to communicate. The communication, or the regulars' ability to understand and accept the enhanced, is presented as doubtful at best, and sometimes as impossible and leads to conflict.
- "Beggars in Spain" and in some ways "Odd john" and "Limitless", surface the issue of the right of the enhanced individual to use his better abilities for personal success, his right to be superior, and of the danger of creating a huge social gap. It is not a question that is being answered in the stories, but there are certainly characters who take advantage of those abilities for personal agendas, and that it is sometimes portrayed as a somewhat immoral thing to do. The plan of the sleepless colony in "Beggars in Spain" to blow up nuclear bombs on earth because the government of USA does not acknowledge their independence (and therefore avoid taxation) is one of the storylines that manifest this question the most, along with sub-questions as the chance of the enhanced and the regulars to co-exist and be part of a united humanity.
- The social gap issues that stories about enhancement raise can be interpreted as metaphorical for the capitalistic world we live in, in which it is considered that people with better skills and/or conditions can and have a right to achieve more than others, and that material success and achievements are the measure of a person's value. Human enhancement's appeal is based on the need for better skills that this culture promotes. Other needs for human enhancement, like increasing humanity's survival and growth prospects, are examined less in these stories (besides, of course, "Beggars in Spain").
- A darker meaning of being enhanced might be that the enhanced can use violence and allow themselves to do so to get what they want. "Lucy", "Odd John" and "Upgrade" have shown such characters, who kill and hurt without being burdened by it morally or emotionally. It could be some sort of a warning that an enhanced

person will consider himself and his existence, goals and wishes to be superior to the regular person's, so killing them when they stand in his way is justified. This notion corresponds with what Yuval Noah Harari claimed about the dangers of Transhumanism.

2.5 Learning from last years' science fiction TV series how to juxtapose narrative, tone and meaning

What does it mean to write a science fiction TV series nowadays? Science fiction TV has gone through a huge development in not more than the last decade, which expanded the genre tremendously. Until the first decade of the 21st century the science fiction TV world has been dominated by shows like "Star Trek", "Battlestar Galactica" and "Doctor Who", which told mainly action-adventure stories detached from our real lives in terms of time, distance, and technology. In the last years there is a growing number of successful science fiction series that take place in closer worlds and deal with different, mostly "softer" subjects. To name a few: "Black Mirror" (which deserves a place as one of the first of this wave), "Westworld", "The Man in the High Castle", "Akta Manniskor" (or "Humans"), "The Leftovers", "Counterpart", "Electric Dreams", "The Last Man on Earth", "Maniac", "Orphan Black", "Person of Interest", "The 100", "The Handmaid's Tale", "Altered Carbon", "Years and Years" and more. Unfortunately, an academic source that documents and interprets this wave could not be found, so referring to it in this thesis and defining it as a wave is based on my own understanding of it.

Most of the shows I mentioned are American, probably because the needed budgets to make science fiction TV series is more easily raised in the American TV market. However, two of the more early and revolutionary series of this trend are European – "Black Mirror" (2011, Great Britain) and "Akta Manniskor" (2012, Sweden). This could be an interesting topic for investigation and discussion, yet I perceive it as not that important to the goals of this thesis. Suffice to say that maybe the lack of sufficient funds, combined with a passion to tell science fiction stories and perhaps a culture that emphasizes critical thinking more than the American, might have had something to do with the creators seeking cheaper,

more dramatic and more critical stories. Anyway, it was quite quick for the American TV industry to adopt this trend and expand it significantly.

My goal in reviewing the latest trends of TV science fiction are to better understand how they widen and set new ways of telling science fiction stories on TV (and as mentioned earlier, the artistic "landscape" my series wants to join), the uniqueness and potential that the current TV series medium provides to science fiction, and also to learn some useful narrative techniques and strategies and get inspiration which had an influence on the writing of my screenplay.

2.5.1 The change in TV series and in science fiction TV

One distinction of the last decade's series is tied in with the general development of cable and later streaming services, a trend since HBO's "The Sopranos" aired more and more non-episodic series. This means that instead of creating shows in which every episode stands on its own, many new series tell a long story that continue from episode to episode. In science fiction this is the transfer from "Star Trek", in which in every episode there is a new problem and opponent, and that the problem is resolved by the end of the episode and makes room for a completely new story, to shows like "Westworld" in which every episode picks up from where its prior ended and the storylines continue. This transition enables the writers to tell much more elaborate stories and go deeper into character's motivations, wounds, conflicts, goals, development, history etc.

The tropes or "novums" of TV science fiction have changed as well. In the past the popular ones were space travel, exploring new species ("Star Trek"), time travel ("Doctor Who", "The Time Tunnel"), Artificial intelligence ("Knight Rider"), or moving between parallel worlds ("Sliders"). In the last decade there is use of "novums" that have more impact on society and certainly much more focus on negative and even dystopic outcomes on humanity. "Black Mirror" was one of the first to do so by building horror stories about existing technologies and "almost here" technologies, with great emphasis not only on the technology as a wonderous thing, but also about the way people are using it. For example – the link between the current fast and open communication and the way it is used to abolish

privacy and encourage the widespread hatred and extremism: in the very first episode, "the National Anthem", someone kidnaps a young princess and forces the prime minister to have sexual intercourse with a pig on live broadcast. In one of the episodes of season 5 (which aired on Netflix on June 5th, 2019), a Facebook-like social network company can influence a hostage situation and reveal more about the abductor than the police. Some other "Black Mirror" "novums" to explain this point: a chip that is planted in a child's brain that enables her mother to watch her constantly, see what she sees and even block the view of things that the parent wants to deny the child from seeing ("Archangel"); a brain implant that manipulates soldiers' brains to see the "enemy population" as horrible roach-like monsters, and not as the human beings they really are, so they can kill them without hesitation or remorse ("Men Against Fire"); a constant recording of everything you see and hear that can be played later whenever, so in the right circumstances your husband can demand to watch the screening of your infidelity ("The Entire History of You"); the ability to erase memories as a cornerstone of a punishment system that makes a murderer re-live a horrible day to the entertainment and education of spectators ("White Bear") and many more. This was a long list but there is a purpose for relaying it. The goal of that was to display how science fiction TV has changed from telling stories that happen in different, distant worlds (like "Battlestar Galactica"), or just presenting some "cool" non-existing technology (like the smart, autonomous and talking car in "Knight Rider"), to new kinds of "novums" that impact the emotions, people's relationship, cause social havoc and manifest more clearly the anxiety about technology that Adam Roberts mentioned. "Years and Years" is also a member of that storytelling family.

In "The Handmaid's Tale" there is another example of a darker, dystopian and new kind of "novum": Birth rates deteriorate, and as a result (which is very important to the different world) an extreme religious cult takes control over the USA, terrorizes the people, and enslaves all fertile women to their benefit. The strong emphasis on a social and political situation repeats itself. In "The Leftovers" 2% of the world's population disappear and the series tells the story of people who are left behind to cope with guilt and misunderstanding, attempt to find meaning, to grieve and more (until the last episode it is unknown why the 2% have vanished, but in it there is a scientific explanation that determines that "The Leftovers" is a science fiction series).

It should also be noted that both “The Handmaid’s Tale” and “The Leftovers” are adaptations from novels, while some more of the other shows mentioned are adaptations from novels. This fact indicates that the new science fiction TV did not invent this storytelling but took it from and “caught up” with the storytelling of science fiction literature and film.

Yet, the TV series medium enables these stories to be taken and told differently, in the best cases using the full potential of the medium.

By large margin the biggest change in last years’ science fiction TV series is that they became more dramatic and turned from telling stories with great focus on external conflicts (wars and battles), to telling stories with a much greater emphasis on internal conflicts: coping with guilt, grief, and finding meaning (“The Leftovers”), maintaining internal freedom and sense of self in a dehumanizing situation (“The Handmaid’s Tale”), coming to face an alternative way you could have developed (“Counterpart”), coping with finding out you are not human but still have feelings and mind, and being torn between loyalty to “your kind” and loyalty to humanity (“Westworld”, “Akta Manniskor”) or deciding between your religious beliefs and the chance of eternal happiness in a digital paradise or about letting your child get to know the robotic “living” replica of her dead father (“Black Mirror”). In accordance, the variety of genres that science fiction TV combines with has grown considerably, from the action-adventure coupling, which was the most popular in the past, to drama, mystery, comedy (“Maniac” and “The last Man on Earth”), horror, detective etc.

2.5.2 The potential that the TV series medium offers science fiction

What can be the potential or the added value of the TV series medium to the telling of science fiction stories? The main value of the TV series medium is its length, combined with it being a visual medium. The length enables the series to tell more storylines and devote enough time to each of them, much more than movies, plays or novels do (at least most novels). It compares in its scope to a novel series or a long novel but differs from it by being a medium that can use visual artistry in telling the story. The way a good series

can use its length-visuality combination could provide very powerful opportunities to the science fiction writer:

- Building a complete world, by showing and telling stories about many parts of that world in a way that a movie or a novel cannot. For example: "The Man in the High Castle" told an alternative history story in which Germany and Japan won World War II. The series happens at the western Japanese governed territories of what used to be USA, the eastern German governed territory, the neutral zone in between, and in Germany itself. It plays out in multiple arenas, such as the governments and secret services of all parties, the resistance, families, personal stories, and on top of that a story about the passing between parallel worlds. The series is based on a Philip K. Dick's novel by the same name, which also contains several parallel storylines, but in the series each story is developed much more. It can cover the action and mystery plots, the growth of the characters, the politics of the world, the lives in every part of the world, the structure of the conflicts and the different values and moral arguments and conflicts that surround the story's themes. For a writer who wants to create a different world, the TV series medium offers probably the widest and richest canvas.



Image 2.12: A map of what used to be USA in "The Man in the High Castle". The show handles many aspects of this alternative history world: politics, family and personal lives, power struggles, ideologies.[50]

[50] Source: https://he.wikipedia.org/wiki/%D7%A7%D7%95%D7%91%D7%A5:Man_High_Castle_(TV_Series)_map.png; Retrieved on June 20, 2019.

- Telling a story about a system. TV series can tell an interweaved story in which decisions, actions and events in one storyline or sub-world have an impact on many other parts or the world and on other characters. For example, in “The 100”, when many of the juveniles sent to explore if earth is “clean” to re-settle rebel by removing their vitality monitor wrist bands, the people in the mother spaceship think they have died, meaning earth is probably still dangerous. This means they must set in motion a plan to execute many innocent people aboard the spaceship so the rest could survive with the little oxygen left. An event in one part of the world has consequences in another part. The use of the wide canvas, the visuals, and the cut between scenes can display this connectivity in an effective way. In “Years and Years” the story keeps showing how events are inter-related and result from each other: USA drops a nuclear bomb on a Chinese artificial island > China pulls out funds from American banks > a huge bank crashes > People (including the characters of the series) lose their money etc. This is useful when wanting to explore social systems and the way technologies affect them.
- Exploring moral themes to the depth. Truby suggested that the main question of science fiction is how to create a better world. Bova urges science fiction writers to use the genre to write “thematic novels”. To do so fully, the TV series medium again provides the opportunity to explore many sides and elements of a theme by giving many characters a unique voice, enough “screen time” that allows to show their complexity, contradicting values and creating empathy and understanding to even the cruelest characters. For example, “The Handmaid’s Tale” is able to tell the unjustness and cruelty by which the governing cult controls and enslaves fertile women; display empathy to the cult’s leaders and their barren wives; show the conviction by which the one who is in charge for brutally training the woman believes in the divinity of birth and her deep affection and commitment for the women she abuses; explore the meaning of freedom but also its prices, the power balance between the enslavers and the enslaved (who still possesses a quality that the enslavers need – so has some power over them);and reveal the internal ways for a character to adapt and explain to herself the situation and much more.



Image 2.13: Offred (real name June), Serena and the baby. Who is more powerful? The enslaved (Offred) or the enslaver (Serena)? The two characters transition between using whatever they can to exercise control over each other, and to bond together for mutual goals. In this scene, where Serena kneels in front of Offred holding the baby, the visual tools of the TV medium are used to disclose the complex nature of the power relationship, and the width of the story enables the tracking of those role changes. Offred's "uniform" are a striking visual that transmits both striping her of her individual identity, and the sacred status she is given being a fertile woman.[51]

2.5.3 "Akta Manniskor" as inspiration

This review suggests that a series about human enhancement could have a place in today's science fiction TV. It is a subject that this medium has yet to explore (except for "Limitless", which has not dealt with the wide social, moral, cultural, and in my eyes also the psychological, implications of human enhancement), but it can be viewed as belonging to the new kinds of "novums" out there. The review also raises the fact that the "landscape" already contains shows that are trying to be relevant to current issues, lean more to drama and not as much to action-adventure, and try to better and more originally fulfill Truby's and/or Bova's call to address themes that deal with more complex moral and social issues.

ATV series that belongs to this era of science fiction TV, and one which I found as highly inspiring and teaching for me in the writing of my screenplay, is "Akta Manniskor" and its

[51] Source: https://www.elitedaily.com/p/will-serena-june-team-up-in-the-handmaids-tale-season-3-theories-are-pouring-in-9737425; Retrieved on June 20, 2019.

British-American remake, “Humans”. I will refer mostly to the Swedish original, even though the two share very similar storylines.

“Real Humans” is a Swedish science fiction TV series, created by Lars Lundstrom and aired for two seasons in 2012-2014. It tells several interweaving stories which take place in what seems to be an alternative present or a very near future, in a world in which there are humanoid robots (called “hubots”) that people use as workers and for other darker purposes. In the show, a group of hubots, which (or who) are preprogrammed by a genius engineer, become self-conscious and strive to live as equal or superior to humans.

The first episode of the show covers several stories:

- The father of a family, in which the mother is very busy with her career, buys a female shaped hubot to do house chores. The entry of the hubot ignites some issues, such as the mother’s feeling that the hubot is replacing her (also in taking care of the children, reading them stories etc.), the father and the older son secretly toying with the possibility of having sexual relationships with the hubot (in the show’s world there is a big hubot-based sex industry). This storyline takes the longest screen time of the episode.
- A young man who is in love with the hubot the family bought, is looking for her. It/she is a hubot with self-awareness potential and was part of a group of self-aware hubots that the young man was helping, and it/she was taken by hubot black market merchants, turned off (and lost her state of self-consciousness), fixed, and re-sold.
- The remaining group of self-aware hubots are on the run from the police who suspect they committed murder, and other people who hate the existence of hubots (those who haunt them call themselves “real humans”, and gave the series its name and will play a big part later). The hubots are on a survival challenge, and seek opportunities to charge themselves, without which they will shut down.
- A retired man (father of the family’s mother) treats his nerdy and naïve looking personal hubot as a son, connecting to it more than to his real family. When this hubot begins to malfunction, the man does everything to hide it so the hubot will not be taken away and destroyed. His family buys him a new hubot in the shape of a strict old housekeeper that will take care of the house and him and deny him from

eating the wrong foods etc. The man hides the old beloved hubot in the basement and keeps trying to communicate with him and restore the hubot's memory.

- A technician at a hubot factory (and neighbor of the family from the 1st storyline) grows hatred towards them, especially when his wife, who for a long time had more fun with and felt more connected to their "young" male house hubot, leaves him for being distant and for his bad attitude to the hubot.

Any story needs an "engine", a problem, and a hero's desire or goal that pushes it forward. In "Real humans" it is the love of a young man and a female hubot, her disappearance and him looking for her. Yet around this axis there are many stories that explore all kinds of interactions between people and hubots. The different stories show different sides of this world and the life in such a world. The hubots are there to fill all kinds of human needs that the humans seem to have a lack of – from cleaning the house, sex and to attending to the children, having a companion and love. Each of the stories is based on such a need that people seem to have but cannot satisfy by themselves and become dependent on the technology to fulfill. This situation provokes emotions of people fearing they will be replaced: the mother who snaps at the hubot for telling a story to her daughter and comforting her, the technician whose wife finds more satisfaction with a hubot than with him, and the "akta manniskor" group which is against hubots. The world of the series also shows the commercial and economical aspects of the hubot industry and uses the TV series medium's potential of showing a system.

For me the strongest narrative decision or technique that "Real Humans" offered is telling multiple stories. Most of them are about regular people and how living in a world with hubots changes and affects their lives, their community, and the way they face personal, familial, interpersonal, romantic, identity, self-worth and moral questions because of the existence of the hubots. This structure really enables the telling of a story about a society, not just a banal war story between people and robots, or a story about high ranked people involved in policy making, but a real vision of everyday life and the social changes. The themes raised in the series also touch upon the rights of self-aware robots, humanity creating a technology to serve and exploit it, and more.

“Real humans” showed me a way to shape my own story and handle a wide range of implications and aspects of a theme, without resulting in being too deductive and boring.

Part 3 – The Creative Process

3.1 An overview of the creative process part

In this unconventional paradigm of research-through-creation, or a creative writing thesis, the chapter about the creative process is the most important part and the one that the other parts of the thesis – the review of the subject matter of the writing, the review of the genre and even the creative work itself – are leading to. It should reflect an integration of the learning achieved through the writing process (the creative decisions, the conceptualization of the main insights about the craft) with existing knowledge about science fiction TV screenwriting, and even to reveal and say something new about it. In some ways it is equivalent to the "results and conclusions" chapter of more conventional research, since it presents practices, actions, and processes of the creative process and attempts to organize those into learning that carries meaning in its context (with the context being the field of writing science fiction in general and specifically a TV series).

The writing of this chapter can be considered as a creative work on its own, calling for several creative decisions. The first decisions to be made, consulted with my thesis advisor – Prof. Brigitte Gauthier, and the members of my comite de suivi – Dr. Isabelle Starkier and Prof. Réjane Vallee – were about creating the right framework to follow. The chosen framework is based on how the screenplay has evolved throughout the writing process, which took place in parallel to learning, reading, and analyzing knowledge on both human enhancement and science fiction.

The thesis actually includes two screenplays, both of which are pilot screenplays (meaning they are the first episode of a series) – the first, written in May 2017 (right after the enrollment to the program) is called "California Republic", and the second one, written in December 2018 (and later edited), is called "Trans-H". The two screenplays are very different from each other, tell different stories, and their dramatic structures differ significantly. Some of the characters remained, some changed their attributes, but most are completely new. Between the two screenplays there were two other attempts to mold the series, which were in the form of a series synopsis ("California Nation" and "Crisprs"). The

framework of the creative process section will follow the process from writing the first screenplay and the progression that ultimately led to the writing of the second screenplay. Every step of the way there were insights, creative decisions, self-evaluations, and the use of screenwriting techniques. Some of those are generic to screenwriting and some unique to science fiction.

Writing a pilot screenplay is a widely common norm for selling a series and most often this is the document presented to producers and broadcasters upon trying to convince them to invest in a series. The pilot screenplay is also the way to create the basics of the series' story and set up the plot lines, the characters, the themes, and the story world. When the pilot screenplay ignites the stories in the right way, creates interest, makes the reader understand the tone, the world, the subject matter, the types of conflicts and so on, it means that it is working well, and that the series has potential. When the pilot screenplay fails to achieve that – it is a warning sign that the series is not founded well. For this reason, the form of a pilot screenplay was chosen as the creative work for this thesis.

For writing this chapter I have used several sources, and will refer or cite from some of them:

- The two screenplays
- The series' synopsis that were written in the process
- A writing journal I kept (several files, in different times), documenting ideas, thoughts, struggles, decisions and insights (in Hebrew)
- Notes from consultation meetings and sessions (in Hebrew)
- Three professional screenplay coverages I ordered after completing the screenplays

3.2 Leading questions

Throughout the progression of the work in all its aspects (the writing itself, the study of the genre etc.) a few questions emerged as recurrent challenges or issues of the writing:

- Technology/Novum: How to design the technology of human enhancement in the story?

- Premise/Storyline: Which storyline to set as the main dramatic "driver" of the story (meaning the challenge/s or conflict/s that a/the character/s deals with and which sets the events of the plot in motion)? With which genres to "mate" the story (a decision that cannot be separated from setting the premise/storyline)?
- Theme: How to represent the philosophical, moral, and social issues of human enhancement in the story? How to construct the theme and whether to take a stand? How to embed those in the drama? Screenwriting teacher Linda Seger (1987) describes the theme as the meaning of the story, as a central idea that tries to tell something about the human condition, and can be phrased as a subject, as a message, as conflicting values, or as a moral inquiry question.
- Story world: What world to create? In which time period to set the story? How different should it be from our known world?

There are several important points to be made about these questions:

First, presenting them at this point and declaring them as axes for this section might be considered premature, since conceptualizing them as important questions in the creative process is a result of the reflection about it and arrived at rather a late stage of the work. However, to properly address the creative process there was a need for some leading conceptualization, and those questions seemed to "pop out" as addressing the main issues that affected the entire writing process. Since phrasing them was an insight on its own, which came from the writing, from learning science fiction theory, and from covering science fiction creations, they are certainly part of the conclusion. Yet they can be viewed as "headings" with the real learning happening inside them.

Second, these questions contain screenwriting "strategy" and "tactics" at the same time. This means that thinking about them affects the story in general (like deciding who the characters are, the tone etc.) and the craft of writing specific scenes, action, and dialogue lines etc. For example, when considering the theme question and choosing a theme of "revenge", the writer will have to set the basics of the story aligned with the theme; let us say – have a character who has been hurt and seeks revenge as the premise or the storyline, but also to write and convey the actual emotions and beliefs of the character, his/her

vengefulness, anger, pain, stubbornness/flexibility (the way the writer decides to tell him/her) and more in its actions and words scene by scene.

Third, there are a multitude of other questions and challenges the writer deals with during the creative process – how to capture the audience's attention? How to shape the characters? How to transfer and provoke emotion? How to design and convey the visual aspects and ambiance of the story? How to begin, develop, and end the story? Those examples are just a handful. So why focus especially on the questions above? The honest answer is that they were the conceptual questions that I managed to relate to and use in my writing process, and they "seem right" to telling the story of writing the story. I do claim that they offer a framework which is uniquely fruitful in writing a science fiction TV series. The "Technology/Novum" question is obvious in that sense, because this is probably the most integral in science fiction, but all of them are treated a little differently in this genre or possess a unique quality that separates the way they are handled in science fiction TV compared to other genres or mediums. A writing process can be described as a system of interrelated and multidimensional challenges and questions, and the four I placed in the forefront are only those I estimated as the best entry points to explaining and understanding of all the other decisions and the way my series is shaped. Throughout this part I will try to deepen the meanings of those and show how answering those in a satisfactory manner shaped the screenplay significantly. Of course, the section will also discuss other screenwriting decisions and techniques that were important in telling the story.

3.3 The emergence of the idea, or why write about human enhancement?

A few years ago, while I was driving, the idea of writing a TV series about people who try to defy death came into my head. It came instantly associated with rich high-tech people from the Silicon Valley, who consider themselves superior to everyone else and strongly believe they can overcome any challenge. I imagined characters as such to be bothered by the "simple people" and have low tolerance to the laws that bind them, so to avoid these nuisances they will act to declare California as a separate state, take ownership of it, and

adopt a meritocratic ideology to base the governing system on (those who are the most capable and talented are those who should govern). This gave the idea a title – "California Republic". Here is what I wrote on a word file from May 2015 immediately when I got back home:

> There are people in California who believe they are superior. They create the most advanced technology, they see themselves as the most enlightened, and they even think they can defeat death. They are sick and tired of "eating shit" from the government and wrestle with authorities and other people's demands, mal conceptions and so on. So, they take over California and declare independence. (own notes, May 2015)

At the beginning it was not about human enhancement and was not clearly a science fiction show, although quite quickly it was clear to me that the then-unknown characters had to deal with some scientific things that made them believe they can overcome death and/or be superior to others in a clear way.

I cannot remember exactly what triggered the idea. After all dozens or even hundreds of story ideas pop-up now and then, most of them never developed. Maybe a more accurate question is why this idea "stuck" and motivated me to start working on it. I think the answer is related to the fact I watched "The Man in the High Castle" at that time, loved it and felt this idea had potential to have some of the qualities that this television series had and made me enjoy it: the portraying of a complete world, with its political aspects; the magic of telling a story that happens in an alternative reality which is a "possibility", meaning it is similar to ours but different because something happened and changed it all; and even more appealing – telling the story of people who can change the way our world is organized. This is a sentiment closely related to one of the ways to express the "mission" of science fiction – exploring different possibilities to the way the world is organized.

It is, of course, also a matter of personal taste. This personal concept of "taste" is much deeper than just the stories or shows I like. It relates to things that interest me or to thinking schemes that reflect some sort of an inner need, created in a cultural context. Screenwriting teacher Robert McKee (1997) says that a writer must believe in what he writes and that his

writing must express his inner motivations and beliefs. I believe this has a great impact on writers' choices of stories to follow.

I was always drawn to the future. It is, in a way, a feeling of dissatisfaction from the present – the way I am in the present, the way my country is in the present, the way the world is in the present etc. One of the ways to deal with this kind of dissatisfaction is through the "comforting" notion of the future. The future holds the promise of control and of being better (which could be an illusion). The meaning of "promise of control" is that the way the future will be is in our hands, what we will do will determine how the future will be: if, from now on, I will work out, eat properly, study and master new knowledge and skills, invest in the right stocks, behave differently, practice yoga and meditation – me and my life will be better. And if we as humanity, or at least Israel, will find peaceful solutions to conflicts, develop the use of green energies, promote medicine, create an economic-social system that allows everybody to live with dignity, relative freedom and well-being and much more – then Israel and the world will be a better place to live in. I assume that there are people who write science fiction because they really love the technological aspects (what Russell called "a fetish for technology"), but probably others who, like me, need science fiction as a way to express that inner tension between the hardship and feeling of a defected present with a fantasy about a utopian future. Even when writing a Dystopia, or about the hazards of the future, it is dealing with the same motivation because it is a way to call for the future to be better by showing how it can go wrong. The inner sources that motivate to write about something are not automatically translated to the actual story (meaning that if one wants to live in a utopia, or longs for a warm family life – that does not mean he will write about a utopic world or about a loving family) – but it determines the kinds of materials that will interest the writer enough and "feel" as having the potential to say something powerful that will give the writer (me) the strengths and energy to enter that long process of taking an idea and developing it. This same motivation of dissatisfaction with the present is what also made the subject of human enhancement appealing – it magnifies that promise of the future indicating that there will be more ways "to be better".

Having said that, it is important to note that science fiction is not that common in Israel. There are science fiction writers, but they are very few, mostly unsuccessful (at least within Israel) and it is very hard to remember even one Israeli science fiction novel that has garnered more than a slight attention (There are some who do reasonably well outside of Israel). In TV and film there is also very little science fiction, and in the very few occasions there is it is usually in a teen show, or only some very scarce novum, usually very easy to produce. In TV or film, it can be explained by the fact that Israel is not rich in production resources that are important in making reliable science fiction. However, this explanation does not account for the lack of science fiction literature. Israeli narrative creation focuses much more on realistic stories that deal with family, war, minorities, gender, relationships between population groups, and so on. "Genre" writing is not that common, except maybe for the detective (or mystery) genre that has gained a little more presence and success.

Interestingly, Israel was founded on the base of a science fiction novel: Theodor Herzl's "Altneuland" (in German: old new land), which was published in 1902, told the story of two visits made by a young Jewish intellectual and a friend – a Prussian aristocrat – to the land of Israel. The two visits were 20 years apart and the characters are astonished to find the enormous development that has happened during that time. In the book Herzl describes a vision of a society which is technologically advanced, keeps values of equality and justice, runs a cooperative based economy, and is a place where Jews, Arabs and other ethnic groups exit and thrive together. He also describes that the second visit happens at a time of elections, and that one party is led by a Rabbi who wants to make the land of Israel as Jewish only. Herzl uses the form of a science fiction novel (which is mainly social science fiction, although it does contain the description of some futuristic technologies for that time – however not important to the story itself) to present his vision for a Jewish country and its values, but also the things he considered as threats. Herzl was not an eccentric writer – he was the founder of the Zionist movement, the establisher and the chair of the Zionist congress (Cohen, 1953), which were the institutes that led within 50 years to the foundation of the state of Israel. "Altneuland" became a pillar text for the entire Zionist movement. Its influence was so great, that the title's non-accurate Hebrew translation – "Tel Aviv" ("Tel" is an old mount, "Aviv" is spring – together representing "old" and "new"

as the original title) –was the reason that the new Jewish neighborhood of Jaffa was called "Tel Aviv", and it is now the name of the largest city of Israel.

Although Israeli prose did not adopt science fiction, there is a lot of non-fiction writing that deals with visions of the future. This includes futurists who are mentioned in this thesis such as Yuval Noah Harari and Roey Tzezana, as well as others.

The conclusion that can be made from the state of science fiction in Israel is that the motivations for me to write a science fiction series of the kind I set out to write, that places considerable attention on social and political processes, is not something that is related to a local science fiction heritage but more connected to my own inner motivations and interests and to a more global development of the genre in the medium of television. This is part of the reason why, when I started conceiving this project, I felt the series would have to take place in California. I could not imagine at the time it being able, practically and mentally, to take place in Israel. California, with the Silicon Valley and the image of technology tycoons who literally transform the world in such a way that they can consider themselves as almost gods, seemed appropriate and fueled my imagination.

Some of the reasons I decided to continue with this idea were "instrumental": a world with human enhancement and power games revolving around it has not been shown in a TV series yet, so I estimated it will be perceived as original. Only later did I get acquainted with "Beggars in Spain", which is maybe the closest thing to that which I was trying to achieve. However, "Beggars in Spain" is a novel and not a TV show, and with all my appreciation of it I did not want, nor was I financially able, to make an adaptation (and personally thought that while some of the novel was very impressive, parts of it did not develop the main character enough). In the TV medium there was no (and still is not that I am aware of) show that dealt mainly with human enhancement, which is not a superhero series or deals with the wide social and moral implications of it. "Limitless" is a show about human enhancement, but as discussed earlier, it does not begin to scrape the surface of the drama that can be made of it. Being original and trying to tell a story which introduces something new is something that is important for a newcomer writer like myself. It slightly increases the very small chances of breaking through the huge piles of screenplays and series ideas that swamp producers, agents and broadcasters, which is a consideration.

The criteria to deciding which story idea to pursue and dedicate myself to is a combination of several considerations: it has to be an idea I feel related to and expresses something internally important to me (or else I will lose motivation); it has to evoke a vision of how the series plays out, in a way that gives me the feeling that I can write it well; and it needs to be something I estimate that is original enough and has a potential to be interesting to other people, especially TV industry people. "California Republic" seemed to pass those very unprecise judgements for me to begin developing.

3.4 Writing the first screenplay

Almost immediately with its conception, the idea included several characters and initial dramatic and story possibilities. The main character was AMOS BAER, a veteran "old school" FBI investigator sent to investigate a murder case. Initially I wanted to design the murder case as related to the conspiracy to declare California independent, and through this to have Amos slowly reveal the conspiracy. I also wanted to tie Amos closer to the conspiracy and the issues I wanted to explore, so I created him as a gay person whose spouse, AARON, is a political sciences professor who advocates for Meritocracy and is about to play a major role in the conspiracy to turn California into a meritocracy. Seeking potential conflicts and secrets which are useful in creating the plot, Amos and Aaron have a daughter – VANESSA. Vanessa is a "design baby" – her DNA was concocted so she will be "perfect" – amazingly beautiful, healthy and super-intelligent. At the age of 21 she already had a PhD in physics and holds a senior position at the leading artificial intelligence and robotics company. Designing her to be so perfect was the initiative of Aaron, the meritocracy believer, a lover of perfection, who did it without sharing exactly what he did with his partner, Amos.

The character of Vanessa introduced human enhancement for the first time into the series. At this point it is a genetical enhancement, and though not yet providing such a strong motive of the series, begins to give it some science fiction elements.

Having the way Vanessa was conceived as down to Aaron and a secret kept from Amos was also related to creating differences between the two characters in a way that was

supposed to demonstrate a central thematic and moral idea I wanted to make present in the series: Aaron's highest value is excellence and striving to be the best you can be. He went far with it – he is not only lecturing about it as a professor and advocate for Meritocracy, but he is also doing the most anyone can do to create their child to be as "excellent" as the technology allows. He is also the "pushing father" who "grooms" his daughter and "trains" her to be special and sees her as someone who is destined to be a leader. Amos' values are almost the opposite. He is smart and talented but always recoiled from striving too much or aiming too high, fearing the politics and the responsibility involved. Aaron always criticized Amos for not "fulfilling his potential". I envisioned the couple as demonstrating opposite value systems regarding excellence.

To complicate things even more, I had Vanessa working in the biggest AI & robotics company, which I called SW. The company's name, in the reality of the show, was short for "Saraswathi", which is the Hindu goddess of wisdom and learning, but the intention of naming the company "SW" was to hint or associate it with Nazism (to resonate the German “Waffen-SS”, a military unit of the SS which was central to the Nazi race policy keeping; Stein, 2002). The Nazist association is to make present the feeling of danger that hides in having powerful people believing they are better to the degree that they allow themselves to change social systems in a way that aligns with their "superior" needs or values. It is some sort of a warning from the dangers that extreme thriving for excellence, supported or nurtured by Capitalistic and Liberal ideology and social systems, might result in. The main conspiracy of having rich technology tycoons taking hold of California is what I intended to have as the manifestation of this idea, which the company's "SW" name hinted at.

In relation to the rich technology tycoons that consider themselves superior, I needed to develop some of those characters. The first of these to emerge was WAYNE BANDURA, the founder and owner of “SW”, who was somewhat inspired by Elon Musk. In order to establish Wayne’s motivation to take over California, I thought up a background story for him – his beloved wife, DANA, suffers from terminal illness. They try all kinds of treatments, but it does not work. Wayne hires the best experts in the world to research and develop a cure for his wife, but when he realizes there will not be enough time, he and his wife agree on her being cryonically frozen until a time when Wayne’s R&D efforts will

prove fruitful. Wayne is thus a person who sets out to cure death. To give Wayne the right motivation, he knows his research in finding the cure for Dana will demand unethical and illegal actions, including experimenting on people, so he joins the conspiracy, providing it with his extraordinary technological possibilities, so when California will become independent, he will get to decide the laws that allow him to conduct such research.

That was the point I reached on that initial emergence of the idea. It then laid waiting, untouched, for roughly two years, until I decided to focus on it in the doctorate.

On April 2017, after officially starting the doctorate, I began working on the pilot screenplay of "California Republic". By that time, I was convinced that human enhancement was going to be the main technology I would like to deal with, after learning more about it during that time and understanding that it could be essential to the screenplay I was setting out to write.

To the reader of thesis: there could be several suitable points to pause the reading of the essay and read the screenplay. This is one of them, at least regarding the first screenplay – "California Republic" - because from now on I will refer to the screenplay with some more detail, comment on it and even show some excerpts from it to demonstrate some points.

I enrolled in a course about writing TV series pilots on Coursera (an online academic long-distance platform), mainly to have a structured time frame for writing the first draft of the pilot screenplay. I took the initial series synopsis written two years earlier and developed it some more, while using some of the concepts John Truby presented in his book "Anatomy of Story" (2008) to assess what I had and develop it further.

3.4.1 The decision about the protagonist and its implications

My estimation was that I already had a rough idea about the settings, the subjects and some characters. I tried to revisit my decision of the hero and his goal – Amos, a detective trying to solve a murder case – and understand it, question it, and develop the story around it.

I elaborated a personal work-in-progress journal to keep a track of all the steps of this writing process and to be able to comment on them later on and analyze the evolution.

As documented in the writing journal:

> "What is the basic stand of my hero about human enhancement? Is he enhanced or is he not? Does he think enhancement is a good thing or is he against it? If I choose Amos as the hero, it is a hero that is not enhanced and tries to stop it, which will be a hopeless battle. He will do so as a law man who pursues something illegal and uncovers the conspiracy, which will of course be too big for him to stop.
>
> If Wayne is the hero it is a story about someone who might get enhanced himself, be positive about enhancement and maybe try to use it for good purposes, driven by wanting to save his wife but thinking this knowledge will serve everyone. His opponents will be from two kinds – governments (or the FBI) who want to restrict him, which he despises, and co-conspirators who are pro-enhancement like him but do it from personal gain reasons and seek to be superior, wanting to deny the benefits of enhancement from the general public. I'm not sure that having a hero whose goal is to develop technology can be interesting and hold the series?
>
> Another hero could be Vanessa. She will be important to developing the technology and she could be a guilt haunted hero after seeing how her invention is used for bad purposes. This gives me a lot of trouble because I do not know how to organize the time for her developing the technology and seeing it being misused." (freely translated from Hebrew)

My decision was to stay with Amos as the lead character. The main reason was that I thought it gives me the best possible "spinal cord" to developing the plot – an investigation of a murder or a death by a seasoned FBI agent. This could give an interesting storyline that creates curiosity and tension, gives the protagonist sufficient motivation (he is doing his job) and enables later to connect the death/murder with the conspiracy to declare California independent. I began to organize the story around it and made other decisions:

- Amos is unambitious in a way that hurts his career. He is 55 years old and still mainly a field agent. I gave him a position that initially sounds very niche, reserved to "has beens", but will prove important in the story – he oversees genetical engineering regulation violations. He is called to investigate the death of a young

man that the police detective thinks display signs of something wrong in Amos' domain – this is how Amos is called for the adventure:

A detective signals AMOS to follow him. They enter the bedroom. In there lays a MALE BODY (around 30). He lays on his back, eyes open. AMOS notices his retina is grey. AMOS observes the situation.

VANESSA (O.S)
The world is changing. You have to stay ahead of it or you'll be left behind.

AMOS starts examining parts of the dead guy's body. He asks with his hands for the help of the detective - who gives a hand.

AMOS
I'll leave this for tech people like you.

VANESSA (O.S)
It's not an option anymore. This thinking, that's exactly why you're not FBI director but... what's your title now?

AMOS
In charge of genetic treatment code violations.

AMOS discovers areas of the dead guy's skin with strange colors.

AMOS pulls out an electronic needle connected to a computer. He sticks the needle into the body and watches the screen.

VANESSA (O.S)
Exactly.

AMOS
Vanessa, I'm counting on you to carry me to the new era.

VANESSA sighs.

VANESSA (O.S)
Fine.

AMOS is surprised with the results on the screen. He shows it to the detective who shares the response.

AMOS
I love you.

VANESSA (O.S)
Love you.

AMOS reaches his hand to his ear to disconnect, realizing half way that it's unnecessary.

(p. 3-4 of the "California Republic" pilot screenplay)

- In the scene Amos is called to see the body and discovers that its DNA is not 100% human (that is the result he shares with the detective). So, there is something wrong going on and it is on his "territory" of genetic engineering regulations.
- However, the crime is unclear. Is it murder? Is it natural? Has this person done this to himself? Is there proof of a crime at all? Instead of just having a clear-cut murder for Amos to investigate, the starting point is of something that is not clear – so Amos' decision to pursue it will be based on his own "gut feeling" that there is something important to discover. It also provides the chance to give him a small conflict with his boss who will object to him spending time and resources on this case, which might not be a case at all.
- I interweaved a phone conversation between Amos and his daughter, Vanessa, to show both his attachment to her and that he is not a fan of technologies (the conversation is on a tiny phone attached to the ear that does not need manual operation – which Amos is struggling to adjust as described in the screenplay a few lines before the above quoted scene).
- Around Amos, I could start building a hub of characters with different attitudes towards human enhancement: his ex-husband Aaron – who will take part in the

conspiracy; his daughter Vanessa – who is genetically enhanced herself (which is a secret kept from Amos) and a scientist who will play an important role in developing the next step of enhancement; Wayne – the billionaire who wants enhancement to save his wife but ultimately wants to use enhancement for the good of mankind, and so on. In order to create a series, the writer needs to establish enough conflicts and opponents who will act in conflicting ways and toward conflicting goals, as well as acting against each other, hiding things from each other etc. An abundance of potential conflicts established in the series' design provide the writer with the opportunity to explore many aspects of the story world and the theme while keeping the audience captivated and surprised for the long journey (which is one of the major advantages and challenges of the TV series medium). Almost everyone on the character hub are opponents to Amos and to each other at some point.

Choosing Amos as the main character is also choosing a thematical point of view – the main character is not enhanced but is against and even fears enhancement (and the underlying value of striving for excellence) and will actively try to reveal an enhancement-related conspiracy and stop it. This means that at the beginning of the writing of the series, that was the point of view I was comfortable adopting – to tell a story that warns us about the misuse of human enhancement and its potential risks. The opening scene tries to make such a warning vision:

EXT. OUTSIDE SAN FRANCISCO CITY HALL - DAY 1

*** cold open ***

In front of San Francisco city hall stands a group of SOLDIERS. They look like an elite unit, extremely well equipped. They stand in rows.

In front of them their leader - a YOUNG BLACK MAN (25'ish, looks very confident).

Two of the soldiers pull down the STARS & STRIPES FLAG from the front of the building, and raise the "CALIFORNIA REPUBLIC" flag, with the brown bear drawn on it.

The YOUNG BLACK MAN seem pleased.

The shot goes back to a POV behind the rows of SOLDIERS, discovering a frightening view - all the SOLDIERS have an electronic chip attached to the back of their heads.

CLOSE UP on the FLAG turns into the titles of the show: "CALIFORNIA REPUBLIC".

The scene shows an event from the future of the show – the taking over of California with an army of enhanced soldiers, with the help of an enhancement chip. At the beginning of the show this technology has not been developed yet, and the purpose of this scene is to be a "teaser" and show a dystopic-disturbing image related to chip implants. This scene joins other screenwriting tools (such as having an anti-enhancement protagonist, portraying the pro-enhancement characters as conspirators, using the SW reference) to convey the theme of the series: human enhancement is something dangerous, can lead to injustice and inequality of Nazi proportions, and we should be aware of it. It sets the series as a dystopia, as a warning tale. However, in this specific version of the screenplay it does not start as happening in an already dystopic world but shows how our world could become like that. Earlier I presented the four questions that I will relate to while analyzing the creative process and one of those was the theme and the writing techniques to convey it.

A second question I already dealt with is the "premise/storyline" issue: A veteran "old-school" FBI agent pursues the case of the death of a young man to discover a conspiracy of the technological elite to take over California and use illegal human enhancement to assert their superiority and establish their power. It is clear that the premise/storyline is strongly related to the theme, to a degree that it is almost impossible to separate the two.

3.4.2 Story world and technology/"novum" decisions

The story world I chose was 2029 San Francisco. Basically, it showed a near future world that is very similar to ours in terms of political, social, and economic structure, only having some more advanced technologies (like the earphone that Amos struggles to adapt to, a network of autonomous transportation, better robotics and data management tools etc.). Why set the story in 2029 and not in the present? The reasons were to have a more "science fiction" atmosphere, getting the opportunity to "play around" with some technologies and also that 2029 is mentioned by Ray Kurzweil as a year in which a breakthrough in the connection between man and computer could happen. It is meant to give credibility to the technological possibility. It is also a way to create for the audience a balance between estrangement and relatedness: on the one hand, 2029 is not the present day, so I can accept it as a different world, but on the other hand, it is close enough to take it seriously as a viable possibility, as something that can happen in my life time without expecting that world to differ too much from ours. If I had told a story about human enhancement that taking place in 2099 it would have been perceived as too far in the future to be relevant, and human enhancement technologies might have been "lost" among a huge number of changes and new technologies. It would have created less empathy and relatedness.

The last issue to address in composing the first screenplay is the technology/novum. It is related to the "story world" issue. Being honest, I think that in the "California Republic" pilot screenplay I got it wrong. At the time of writing this screenplay, my current understanding of the real role of the novum and how to handle it properly was not there yet. Since the next chapter will deal with my discomfort with the "California Republic" and the reasons I moved away from it, I will analyze my decisions regarding the technology/"novum" there and later describe the evolvement of my understanding of the way it is better treated in science fiction writing.

3.5 Reviewing the "California Republic" pilot screenplay

The screenplay was written in a period of one month, during an online course on Coursera. Throughout the course there is peer assessment from participants on each other's screenplays. "California Republic" received favorable reviews, with one even claiming it had "A Philip K. Dick feel to the story", which for me was a huge compliment, especially after one of my prime inspirations was "The Man in the High Castle", which is based on a Philip K. Dick novel and I wanted to create a similar tone.

However, I was not pleased with the screenplay, feeling that it makes for a good, fluent read, but that there was something important missing, yet I could not say exactly what it was.

Aside from the course reviews, I sent the screenplay to a couple of paid coverage services. A coverage service means that an anonymous reader that has a background in screenwriting or production reads the screenplay, evaluates it, writes notes, and grades it.

The two coverages gave different evaluations to the screenplay – one graded it as "consider with reservations" and the other graded it as "pass". Most services state that roughly 95% of the screenplays sent receive a "pass", around 4% receive a "consider" and 1% receive a "recommend". But the most important things to take from a coverage feedback is the feedback itself – what works and does not work in the screenplay.

The more favorable points in the coverages were that the screenplay creates tension, the characters are well built and have distinct voices, and that two of the scenes/storylines – (a) A scene in which Amos reveals that Vanessa is a "design baby" and confronts Aaron about it (p. 31-32 of the screenplay), and (b) Wayne trying to take care of Dana and cryonically freezing her – were engaging and evoked emotion (p. 42-45). The less favorable points were that the show is too "talkative", that the main character of Amos, an underdog FBI agent, is not unique enough (aside for being gay, which was considered by one reviewer as not enough; one of the reviewers was more favorable to Amos, saying he is an easy character "to root for", but also thought he needed more edge and uniqueness).

One issue that was evaluated differently was the thematical aspect of the screenplay and the promise of its premise. One reviewer wrote:

> "The plotline captures one's attention. The idea of DNA or genetic engineering and manipulation makes for a solid hook. The series has the potential to explore the moral argument of advanced medical and genetic technology and how this can be used to benefit man and society versus how it can be detrimental to man and society. It is a relevant debate and one that maintains one interest. In fact, consider the idea of some of the characters engaging in such a debate."

The second reviewer considered it to be not as original and not specific enough in the screenplay:

> "Is this just another story about humans in the future being on the cusp of being able to genetically modify each other to the point of immortality? Or is there something more to it? It is like there is something more there, "on the tip of the tongue," so to speak, but it is not in the script. This feels a lot like all those other previous stories that have similar premises, but I have a feeling there is something more to it."

The two reviews helped me realize that the goal of telling a good story about human enhancement has not been achieved -that it is an "OK story". I thought that it is not just tightening the craft of screenwriting, giving some characters more depth, reducing dialogue, increasing action or the sorts, and writing some scenes better. I felt that something is not working; that although some things were achieved in the screenplay, the depth and originality I seek were not there. Roughly at that time my thesis advisor, Prof. Brigitte Gauthier, had a reading of the screenplay with students. She commented that in the reading there was a feeling that the screenplay "moves fast" and is somewhat enjoyable, but in the end, it was hard to remember exactly what went on in it or to take something from it.

Speaking with Prof. Gauthier about the reading helped me to reach a conclusion that the screenplay both benefited and was damaged from the most basic decision I made about it – the premise. I chose to tell a story that uses the detective genre together with science fiction: have a detective (Amos) investigate a death and through the investigation reveal a larger conspiracy concerned with enhancement technologies and taking over California. The storyline helped me in creating a fluent plot, that could easily be translated into a compelling story, as one of the reviewers wrote:

> "The goal appears to be clear and the stakes feel high. A murder mystery or death mystery is always engaging and pulls the audience into the story."

But this decision came with some heavy prices. First, the detective genre is overloaded with stories, which makes it very hard to be original and tell a new kind of story. There is a big risk of it feeling cliché and repetitive of other stories (which might have been the case in the way one reviewer perceived it). Second, since the detective genre is about revealing the truth, then the truth is unknown at the beginning, meaning many of the things that are crucial to the story and the theme, such as the conspiracy, the technology itself and so on, are not disclosed in the pilot screenplay (they are found in the season bible, but not in the screenplay). One might say it is a legitimate storytelling strategy – to hide things for later revelation and keep the tension – but in this case it did not work well because too much has been kept away for the readers/audience to start understanding what is really going on, what the show is about. If it was a feature film or a novel it might be acceptable, since the revelations happen in the time frame of the story, but in a series the pilot screenplay needs to give that understanding. Third, having a detective story at the center would force me to keep many of the dynamics, actions and interactions of the group that deals with human enhancement secret, and narrows my ability to tell the human enhancement story. In other words – the detective story "steals" the attention from what might be the true dramatic potential of human enhancement. The film "Upgrade" (which I saw months later) demonstrates that in the shorter narrative of a feature film this can work and one final climax or revelation can be powerful and insightful in terms of theme, but a TV series is much more systemic and shows a much wider world (which is one of the main reasons I chose this medium), and needs a different approach.

There were more drawbacks to the screenplay. Some of them I could understand or explain only later, after learning more about science fiction and analyzing other shows:

- The portraying of the technology/novum was incomplete at best. I blended three kinds of human enhancement technologies: genetic "baby design" (as the way Vanessa was "created"), the beginning of brain implant enhancement, which in my mind was supposed to be the most influential in the future (as shown in the futuristic first scene and in the lab where Vanessa works), and a mysterious genetic treatment

that the character of Dr. Sajel experiments with and that might have killed Rob Rand. I felt that the story's "novum" consisted too many different technologies, which caused it to lose focus and disperse the story and the theme. One evidence of that is that although I intended the brain implants to be the real novum – everything in the pilot screenplay pointed to genetic enhancement being at the core of the project.

- One of the things that bothered me in writing the story was that when the enhancement technology was "ready" it might be "game over" for the regular people, that the advantage the enhanced people would have would make it too big a difference, like the one between humans and dogs, so the tension would diminish. That assumption was one of the reasons I wrote about a time before the technology is fully developed. However, this is probably a naïve "black and white" approach to the technology. Growing out of this assumption and viewing human enhancement as a more complex concept, with the possibility of enhanced people being vulnerable and not necessarily better at everything, is something I needed to go through, so I will not be narrowed in my approach to the story. Again – a science fiction writer should know his technology.
- A big problem with the technology in "California Republic" was that it was unclear and there was very little description of the technology (by description I do not mean having a character explaining it but weaving the qualities of the technology to the action and the story). At the start of part 1 (about human enhancement) I declared that a science fiction writer should know his technology. So, I should have known what kind of enhancement I want, what are the scientific assumptions behind it, how they work and how they interact and influence other things in the world. That was not completely absent from the screenplay, however underdeveloped (my research about human enhancement technologies was on its way at the time, but far from being completed).
- At the time the pilot screenplay takes place, most of the technologies of human enhancement were not developed yet or did not work yet. The exception is the "design babies", but since Vanessa is already 21 years old it is "old news" in the world of the series. This means that there was no real active and influencing novum

in the screenplay, so the story is reduced to a detective pursuing forbidden experiments (which will later turn out to be part of a conspiracy which is more political). This I now consider to be a poor writing choice that also hinders the materials and subjects I wanted to address.

- The story world building of a science fiction story is very related to the technology/novum aspect. When the technology decisions are not yet complete, the story world might suffer. I believe this was the case with the "California Republic" screenplay. The story takes place in 2029 San Francisco, a futuristic world but one which is quite close to ours. When writing the screenplay I mostly went along with the detective plot and the relationship of the characters, and in order to create the "2029 San Francisco" world I inserted a handful of new technologies (like a net of autonomous cars and a new kind of tiny phone that attaches to the ear lobe) and a location of an advanced laboratory where Vanessa works, the place where the planned future novum (brain enhancement implants) will be developed. This is not enough. If one wants to write a TV series that discusses the social and moral implications of a future technology, it is important to be precise and unique in the portraying of establishments, politics, social phenomena etc. In "California Republic" there is a high-tech company that resembles what we know today, an FBI branch that could have appeared in many other stories, a modern family (two separated gay men and their daughter), a university and so on. It is true that there are hints for a conspiracy that will ultimately change a lot, and that the major technologies that will influence the reality in the show are only at initial stages of development – but still there needs to be more.
- The last issue raised a big question for me moving forward: when to set the story in the timeline of the advancement of human enhancement technology? "California Republic" begins when the technology is in development, so all the consequences it might cause are futuristic to the story world. It is also possible to move forward in time and show either a world that is already greatly changed or setting it somewhere in between. What might be more interesting dramatically? Engage the audience? Provide the conditions to address more aspects of the theme with more depth and originality? This question will be discussed later when thinking of new

premises. In this screenplay it was meant to focus the story on the process of the emergence of the technology and show the people with the choice to take advantage of it and deny it from the public or to use it for the greater good. Along with other decisions mentioned before it resulted in the pilot screenplay being unclear about the theme. Having it play out in a time when the technology does not exist and still not changing the world, together with making it a detective story that hides the truth at the beginning and a protagonist who is not enhanced and views enhancement negatively, all "contributed" to this result.

- Another point I felt unsure about is the political aspect of the story world. It had, basically, three "players": (1) People who want to advance Enhancement who are "evil", hence want to do it for themselves or out of a fascist evolutionary ideology (and scarcely represented in the pilot screenplay by the "Walker" people). (2) People who support enhancement but do it out of the belief it will make the world better (and represented by Aaron and Wayne Bandura). (3) Amos, the protagonist, who is obligated to the law, the state and is against enhancement. Strengthened by the decision to make Amos the protagonist who is a detective pursuing outlaws, this is tending to the "good vs. bad" dichotomy, with the anti-enhancement side as the "good" and the enhancement supporters as "bad". Well, it is a little more complicated and unclear than that, by planning to present the inner conflict with the enhancement supporters and other ways, but they are not as present in the pilot and the current political setting does lean hard to a simplistic "good-bad" paradigm. This is not what I was hoping for.

Pleased by having completed an "OK" screenplay, but not pleased with it failing to be as good as I wanted and a feeling I could "squeeze" much deeper drama and thematic resonance out of human enhancement, I set out to do a major rewrite.

3.6 Incubation and lateral work

After writing a complete draft of a screenplay there is a time period, often long, in which it is very hard to imagine the story otherwise. This is true even when having plenty of doubts about the work (which I had). It could be that the doubts make it even harder to

progress - it is all right to have the first draft be no more (yet probably less) than decent, but the second attempt should be better. This is a pressuring thought.

For me, in this writing process, the effort to "liberate" myself from the first draft took a little more than a year and included several processes that happened in parallel:

- Learning more about human enhancement – most of the work presented in part one of the thesis has been completed in that time frame. During this time, I studied much more about the technologies of human enhancement and read the works of Bostrom, Fukuyama, Hughes, and others who analyze the social and moral questions of the field. This effort benefited the "incubation" process by making me much more knowledgeable about the technology and the science of human enhancement, but also made me much more aware to different aspects of the social and moral debate. One of the actions I took during that year was to write down as many thinking points and questions regarding human enhancement, which later I used when developing ideas and storylines. This last exercise – writing philosophical questions or possibilities and then trying to brainstorm story ideas from them – as didactic as it may sound, proved itself to be one of the most enriching tools I used during the process that led to the second screenplay.
- Leaning more about science fiction – most (nearly all) of the work done about science fiction that section two covers has been undertaken during this year; for instance about the concept of "novum", the works of Roberts, Scott Card and Bova about the writing of science fiction, and the importance of world building etc. It made me realize and articulate many of the dimensions and decisions I need to consider when writing my series. It is always debated whether a writer should work with guidebooks and story theories or not. I can say that I could not directly translate the theories into direct practice, but that it did "fuel" my thoughts with options and questions that had a part in the writing of the final screenplay. Also, the way I conceptualized science fiction writing to myself (and which I display throughout this section) is similar but not identical to the theories.
- Analyzing science fiction TV shows – during this time I have watched many of the shows I referred to in section two. Among these were "Altered Carbon", "Akta

Manniskor" (and "Humans"), "Black Mirror", "the Leftovers", "The Handmaid's Tale" and others. I occasionally watched the first episodes (the pilots) and others more than once, sometimes writing down the story outline scene by scene, and collecting thoughts about the storytelling approaches and techniques they used. This had a big impact on my process by making me aware of possibilities I did not consider earlier or did not have a good picture or scheme in my mind as to how to develop. Later I will be more specific as to which shows gave me what insights.

- Just writing thoughts and ideas – throughout the year I have continually written to myself possible storylines, scenes, things about the characters, and asked myself questions about the subject and the story, giving myself reminders about what I want to achieve etc. Screenwriter and writing teacher Christina Lazaridi relate to story development as a passage from mess to elegance, with finding the core of the story, trusting your own motivations and intentions as guides in this process, and finding the right questions to navigate it. This can serve as a good description of the process I went through.

3.6.1 Trying Vanessa as the protagonist: "California Nation"

During that incubation period I have gradually started to play with several options to change the story. One that "stuck" for a long time was turning Vanessa into the protagonist. If you recall it came before writing the first draft. I perceived Vanessa's character as a brilliant scientist who is an "asset" for the enhancement seekers because of her scientific abilities (she develops the next generation of enhancement technology), she is enhanced herself because her father concocted her DNA and even more importantly – she has the potential to change her values and move between being pro-enhancement and anti-enhancement. This shifting potential is also empowered by her two fathers: Aaron who made her enhanced and Amos who is clearly against enhancement. As their daughter her moral position is very interesting, since she can relate to both and is unlikely to dismiss either. If they are "thesis" and "anti-thesis", she is the promise of "synthesis". When they are in conflict, maybe even an acute conflict (and that is the way they are headed), she finds herself in the middle without the luxury of being neutral. Even more so, as being enhanced,

her stand regarding enhancement can be, metaphorically or emotionally, her attitude towards herself. If she sees the evil and injustice that enhancement might promote, she cannot overhaul herself from being enhanced so she must make decisions in her own right to exist as enhanced. If she supports and promotes enhancement, it could mean her accepting the way she is and her superior abilities as just and meaningful. This is a situation that resembles themes encountered in the superhero genre (like in the series "Jessica Jones" and "Heroes").

So, Vanessa holds the promise of being a protagonist who offers richer nuances and possibilities. Building on that there are plenty of other decisions to make. The result was a new series synopsis called "California Nation". The synopsis is also part of the creative pieces in the thesis, so it will be told very shortly here and can be read in full.

"California Nation" takes place a little further in the future, roughly in 2035. In this year VANESSA wakes up from a unique catatonic stage: five years earlier she led the development of enhancing brain implants, volunteered to test it on herself and the experiment caused her to lose her self-consciousness but keep her improved cognitive abilities for work. This means that for 5 years she was an almost robotic "thinking machine", capable of developing and perfecting her invention but did not exist as herself. WAYNE,WALKER (a pharmaceutical tycoon who wants to control the new California) and AARON used her inventions to fulfill their utopian vision of a society governed by enhanced people who will make humanity "better", but it went wrong and the California they established quickly slid to a fascist country, very powerful and world-leading technologically, but with a clear distinction between the powerful few and a lower, "lesser" class of regular people. The regular people are offered the opportunity to live in the very high living standard that the advanced technology that the new California offers, but they are doomed to be a lower class and serve the enhanced "masters". Alongside them there is a haunted underground (that AMOS is part of) who seeks to overthrow the governing enhanced, but do not really stand a chance (one of the possible lines of this concept is the underground trying to obtain enhancement abilities to fight the enhanced government, which can create many ethical possibilities). Aaron, for whom this world is not what he aimed for, stays in a governmental position both to try and sublimate what he can in actions

against the population and to watch out for the "human-robotic" Vanessa who is held by his powerful conspiracy colleagues (Walker and Bandura, who between themselves have a power rivalry) and keeps perfecting the enhancement technology without knowing what she is doing.

That is the world Vanessa wakes up to. An attempt to release her, carried out by Amos, causes her to regain her self-consciousness. She encounters a completely different world from what she remembered. Moreover, she learns that the injustice of the world is much due to her work, that Amos is persecuted for being in the underground, that Aron (the name changed from "Aaron" over time) is one of the "bad guys", even if he did not intend to, and that his love and worry for her is part of what kept him there. At the beginning of the series Vanessa, swamped with guilt over her contribution to this unjust world and with confused emotions towards her fathers, is becoming committed to the goal of doing what she can to take down the government of enhanced people.

The story form of a character waking up in a different world was influenced by watching "Altered Carbon" at the time. In "Altered Carbon" a character is "resleeved" (his mind chip is inserted to a new body) after 300 years of being dead. Of course, he is brought back to a new world. This story form allows this character to explore the new world and reveal how it works and how it turned to be like this. It can also provide the opportunity to manipulate the knowledge gaps, have plenty of revelations about what happened in the catatonic years, and have characters lie or hide things etc. All those create potentials for dramatic situations.

I felt that the new "California Nation" synopsis had more promise than "California Republic". It had many sides up against each other, each having its own reasons and values; it had a protagonist who is less "one sided" than Amos in the first draft and created more internal conflicts and growth potential.

In terms of the science fiction parameters "California Nation" was more evolved than the previous work, but not yet "there":

- The technology/novum was more distinct: brain implants enhanced cognitive abilities that can be used by the enhanced people to further the technology and to create technologies in other aspects of life. It is still not precise enough and the

synopsis does not cover the technology with much detail. It does reveal something important – that having an implant might cause a person to lose his self-consciousness.

- The story world had more branches and specified a new and more elaborated political condition: an independent California, power held by a rich technology-based elite, an underground resistance movement, some aspects of civil rights changed, a complicated relationship between California and the USA etc.
- The premise/storyline is defined more closely to the subject matter. If the detective story was kind of "plugged" into a human enhancement world, and the goal of finding out the truth is generic, this time the protagonist's goal is derivative to the subject – take down an unjust government that built itself from the power of human enhancement technology. This is also a goal with high stakes – bring back freedom to the people.
- The theme is roughly in the same area as it was in the first draft, a warning tale against the potential dangers of enhancement making a group of people so much more capable and superior to others that it will decrease the value and possibly damage the rights and even the existence of "regular people". However, the setting of the protagonist and the different players (as told in the "story world" point) provide a more complex system of values and possible ironies and conflicts (like having the anti-enhancement underground using enhancement itself or it will stand no chance). The theme is also present from the get-go, because Vanessa wakes up to a world which is already like that, and not like in "California Republic" where all those events are in the future of the story.

3.6.2 Consultation with script consultant Erik Burk

All in all, "California Nation" seemed to have more potential than "California Republic". Still I felt unsure of it. The synopsis is full of backstory and set-up, defining the "players" and their motivations, telling the history that preceded the beginning, and not enough story from that point on.

To cope with that I had a phone session with screenwriter Erik Burk. Burk is a known screenwriter who participated in the writing of "Band of Brothers" (An HBO series about World War II produced by Steven Spielberg and Tom Hanks), a screenwriting consultant, and the writer of the book "The Idea" (2018) that provides principles for creating a strong premise. In the session Burk told me that there are too many changes, events, and stages happening in the world before the series starts, that it creates an overload of explaining needed for the audience to feel "grounded" enough so it can attach itself and not be in a confusion that kills its engagement. He also said that as a reader/viewer he would be more interested in seeing how it all started – that human enhancement is a new and original enough topic that "skipping forward" will leave gaps that could make the estrangement (this is my "science fiction" framing) too large. Watching how enhancement started and how it started to change the world is interesting enough.

This remark made me much more aware to the decision of setting the best point in time of the enhancement development for the story. I moved from a screenplay that begun before the major development, which was too soon because it left the story without an active novum and clouded the theme, to a screenplay that jumps to a point when it is highly evolved and the world had changed dramatically, which might be too late and create too wide an estrangement.

I was not completely sure about that remark but also could not reject it. Having watched "Altered Carbon", which had a similar structure, I knew it took me at least a few episodes to overcome the overwhelming details and novelties of the distant future world – so I could understand what Burk said. However, "Altered Carbon" is a successful show with many fans, that managed to bring the more extreme cyberpunk subgenre to relatively mainstream TV (it runs on Netflix) and ultimately, I got hooked on it myself. So I was not as sure that having that advanced point in time in itself is that bad (though understood it has its risks) but I did understand how it interfered with me going on with the writing: the amount of backstory was a burden both in the necessity to find ways to transfer it to the viewers and in potentially having the past events sort of "overshadowing" dramatically the events that might happen in the series itself. In other words, the backstory and the set-up were perhaps

(because that is a subjective interpretation) too rich and detailed that they would have created a feeling that the "real story" had already happened.

Another point that Mr. Burk made was that enhancement of cognitive abilities could be tricky in terms of television, because it is not visual. He advised me to think of other kinds of enhancement that would be more appealing visually. Much prior to this conversation I brainstormed all kinds of enhancements, among which the increase of physical strength and quickness, ability to control electrical devices, heightening senses (better and/or thermal vision, hearing everything, ability to recognize chemicals by smell), sensing magnetisms, improving the immune system so it can fight all diseases and heal the body quickly (the last one is not as visual as some of the others) and more. Some of those ideas were based on actual developments and some are invented but not necessarily impossible. Although I understood the entertaining and visual value of this advice, it was one that I was reluctant to adopt for two reasons: one – it moved the enhancement issue closer to the superhero genre and I did not want that, but rather I wanted to keep the focus on enhancement with cognitive abilities being one of the domains that enhancement focuses on and even somewhat differentiates it from "plain superhero"; two – I started to sense that the screenplay would benefit from narrowing the novum and making it more specific. If there are many kinds of enhancement technologies and options, it might be too "all over the place". In a mixture of what is interesting for me personally and what I estimated to be a technology that would really change human society – I remained "loyal" to cognitive enhancement. The social impact is that having people with extremely high IQs divides society to greater extents and changes the fabric of it than having people with better vision (unless they go around diagnosing tumors all around them) or even physical strength (so they can lift heavier weights and punch harder – so what?). The personal aspect of this choice is the high value of intellect which is rooted in me. It is considering intelligence as the source of human advancement and success. This belief might be wrong and so it is my decision to "stick" to cognitive enhancement – but it is the decision I made.

Another important thing that Mr. Burk said was to sum up the central problem in the story: people who fight an unjust and fascist government. He said this can be a good premise for a series because it is a very big and unsolvable problem with very strong opposition. To

“hold” a series story for several seasons, the premise needs to have a very big challenge for the characters, or else the series will run out of stories since the problem has been solved, feel forced and prolonged, or seem like it is not consistent due to the main issues changing and the series loses its identity.

However, my reaction to this observation and phrasing of the premise was different: Hearing it coming from the outside made me question if this is really the issue I want to pursue in the series. The idea of human enhancement as a trigger for the creation of a new class system in which there are a few who make themselves superior to the others certainly exists in the philosophical literature about human enhancement (Yuval Noah Harari, for instance), and it is something to worry about as a society and also might make an appealing, concise conflict in a TV series. But I started to think it is not enough for me, that it might be, as mentioned before, still bordering a cliché, too “good vs. bad” (even if the setting provides more complex motivations for the characters), and too similar to many other stories that have class gaps, the suppression of the unprivileged etc. It will make the audience feel and think something like “Take down those evil exploiting enhanced bastards”, and I was not sure that emotion is unique enough for this story. A series about human enhancement might include that motive as well, since it is a relevant aspect of this topic, but it might not be the right overall framework of the series.

By that time, I had read more about human enhancement and could understand that there are more moral and social issues. I was impressed with Francis Fukuyama’s approach, described in the chapter about the social and moral issues of human enhancement, that one of the hazards of human enhancement is the gradual changes in human experience that will ultimately, maybe even without notice, push us over a thin line that is the boundary of what we consider human. A possible scenario of human enhancement is that it is not coming in a “bang” and changes everything, but that it is another phenomenon that joins life and society and creates new qualities in life, new struggles, new interactions etc. It is harder to write, most likely a much tougher sale, but I had to try it.

With this goal in mind I turned back to brainstorming new possible premises.

3.7 Brainstorming new ideas

I went back to the confusing phase of trying to discover what the series is about, what is the storyline/premise, and who are the characters. I now had rephrased goals to the writing challenge:

- Writing a science fiction story for a TV series in which the differentiating technology (or the novum) is of human enhancement.
- Exploring human enhancement from a moral, social, and psychological aspect.
- Creating stories that convey to the audience different meanings and possibilities of how human enhancement can impact the lives of people, in an engaging, and dramatic way – have the audience "feel" what it is like to live in such a world.
- Create a feeling of a system, of an entire world changing.

For a while I started working on three different story ideas at the premise level – defining the characters, the story world, genre and tone, and most importantly the struggle, the goals of the characters, and their obstacles. Here are the three ideas:

"The Last Just Human President": This tells the story of an American president (who could be a state leader in other countries) in a time that the world is populated with many kinds of enhanced people. He is elected based on a platform that calls for "real people" to remain dominant, but there is a sense that it is a matter of time before an enhanced person will become president. Maybe having an enhanced person as president would be better, because an enhanced person will probably do a better job. The challenge of this president in the story is to prove he (and the organic, "original" human being) is worthy and relevant, against industry leaders and enhanced leaders who claim that the leadership should be the role of someone more "qualified", whether it may be in the presidency institute or some other mechanism that replaces it.

"Crisprs": This tells the story of a group of children, between the ages of 8-13, whose parents entered them in an experiment using Crispr DNA editing treatments to enhance their abilities. It turns out that one of the families who participated in the experiment lost their child because of severe side-effects of the treatment, became religious and now, under the inspiration of a fanatic reverend, goon a murder spree to kill all the children who took

part in the experiment. The protagonists are ARON (who is in favor of the experiment and promoted it), AMOS (who was against it), VANESSA (who in this story is 13 y/o and went through the painful treatment) and her non-identical twin sister CLAUDIA (who was afraid from the injections, and Amos stopped Aron from making her go through it – so she is not enhanced). The storyline involves Aron and Amos, with the help of Vanessa and Claudia, reaching all the enhanced children before the fanatic religious group get to them and protecting them by building a hidden sanctuary. In this storyline I thought to relate or create several "story arenas" that present the option to address different aspects of human enhancement, through a captivating and tense story frame:

- Telling a story about a unique family in which one child is enhanced and one is not, with a background of a conflict about enhancement and with the non-enhanced child feeling inferior and needing to prove her worth after giving up on the possibility of being enhanced too out of fear. On top of that it includes coping with a teenaged enhanced daughter – an idea I started to like very much. Having Aron and Amos as a gay couple brings a metaphorical value – they obviously could not have conceived their daughters the usual way, and as with many gay couples they had to "manufacture" and "produce" the process of having children.
- A second arena is the creation of the sanctuary – which is a sort of segregated community of enhanced children. The dynamics of such a community seemed interesting for me.
- The religious group that aims to kill the enhanced children are the big threat and the clear antagonists, thus providing the tension to the story. Note that it is almost opposite to the point of view of "California Republic" and "California Nation" – this time the mission is to protect the enhanced and not fight them (so I managed to liberate myself from the one-track-minded assumption that the story is mainly about the risks of enhancement). Telling their story as parents who lost their child (especially if we start the series by showing their suffering) makes it more complicated and inserts the notion of the physical dangers of enhancement – making enhancement a personal choice with a price.
- The group of parents who participated in the experiment and sent their young children to experience the painful treatment so they could be "better" is another

group of characters that I could use to tell their stories: their reasons and motivations in doing it, coping with the guilt of hurting their children and now with the death risk they have given their children.

- The series also gives a chance to peek into the lives of different enhanced children in the world they live in. They might feel lonely, feel superior to everyone else, or feel it is too much for their parents to handle. Maybe they do not have the emotional tools to handle their abilities, and one of them might be a young and brilliant psychopath. So many things can be done in this framework.

"Trans-H": This series idea is not based on one storyline but rather multiple stories that connect between them about the lives of people in a time that enhancement technology begins to change the world. There is a big company called "Newman" which is a monopoly in the enhancement business. They developed a brain implant that works as an "addition" to the brain, interacts with it, and increases specific cognitive abilities. There is a "menu" of cognitive abilities to choose from – and the decided abilities are enhanced by the specific wiring undertaken in the implant operation itself. After the implant there is an adjustment period in which the brain absorbs and rearranges itself to accommodate the new abilities, and for the newly enhanced that could be a time of pain, hallucinations, disorientation, and sometimes even unconsciousness. The founder of "Newman" is SIERRA NEWMAN, who uses her influence to destroy potential technological opponents, keep herself a monopoly, and cultivate a secret plan to use the fact that she is the only one who can enhance people to completely change society – she wants to create a new elite based on past minorities or less represented population groups (women, black, gay etc.) and more importantly – they will be loyal to her; ARON is a senator who is appointed to lead a committee that tries to adjust laws and regulations to the rising phenomenon of enhancement, while the current law did not "catch up" with reality. His real goal is to take the control of the decision about who gets to be enhanced and who does not out of Sierra Newman's hands and make himself in charge of it, understanding, like Sierra Newman (who keeps the clearing process and the data about who got enhanced a secret), that whoever holds the authority to approve enhancement holds the key to the future; Aron's daughter, VANESSA. is an ultra-smart enhanced teenage girl who has already solved huge environmental issues (showing why enhancement can benefit humanity) who feels extremely bored with the easiness of her life

and mates with the oldest enhanced person, ANDREA (a 60 year old medical doctor whose developments saved a lot of lives) to go on illegal adventures together; the MARZANO family are hard-working people who decide to have their daughter, SOPHIA (8 years old), go through pirate enhancement (enhancement at "Newman" costs several millions of dollars, which they do not have; the high prices led to the rise of a small pirate enhancement movement). They do it after BRAD, the father, loses his job when enhanced people make his line of work redundant and they want their daughter to have a better future – but after the operation Sophia does not wake up for a long time and they are helpless about it. Brad joins an underground movement led by a charismatic reverend who sets out to fight enhancement; MARIA is the head of security in "Newman" and in charge of hunting down pirate enhancers and preserving Newman's monopoly. She and her beloved husband, ZACH, put all their money in having her enhanced realizing (like others) this could be a key to a better future. He treated her throughout the painful adjustment period. However, after she wakes up enhanced, she starts to view Zach as boring, not at her level, and inferior. She stays with him out of obligation but the love and the bond fades, and he feels it; JOSIA is a young biohacker (named after the real biohacker) who has been saved from schizophrenia by his brother, a brilliant neurobiologist, who places a self-made implant into Josia's brain which gives him enhanced cognitive abilities he can use to self-regulate the schizophrenic thoughts. His brother is murdered after trying to register and approve his implant (which is much cheaper than Newman's) and Josia sets out to continue his brother's work of making enhancement affordable to everyone but also to take down "Newman" (and Sierra Newman especially), believing they are responsible for his brother's death. Josia is also the one who implanted the chip in Sophia Marzano's brain.

Of all the stories, Josia trying to take down the mighty "Newman" corporation and them trying to haunt him as a competitor and a pirate enhancer is the more central storyline that provides the larger framework to the series. However, the strategy is not to tell this single main story and have some sub-plots branching out of it, but to tell several stories that happen in a world where enhancement exists. It is harder to define this concept in a logline, but if forced to do so I might say it is "The story of a robin-hood like biohacker who sets out to destroy the huge enhancement monopoly whom he considers responsible for the murder of his brother and to make enhancement affordable to all". The logline of "Telling

the stories of people who face new problems in a world in which you can 'upgrade' yourself" might reflect much of the thematic and stylistic intentions, but it does not present the engaging conflict that is at the core of a proper logline (Hauge, 2006).

The greatest values of the "Trans-H" idea is the opportunity to tell stories that are less generic about the personal lives of people in a world that begins to change dramatically, for the better and for the worse, because of human enhancement technologies. It allows one to tell stories that touch upon many different aspects of life with human enhancement: politics, society, economy, family, maturation, and love. It makes it possible to approach human enhancement not from a "it is good – it is bad" paradigm, but with much more complexity. The downside of this concept is that there is no one clear protagonist and storyline, which makes for a tougher sale and makes it harder to get the audience empathize with a leading character and attach to him/her.

The conception of "Trans-H" was greatly influenced by the Swedish "Akta Manniskor" (I watched the American-British version – "Humans" – only later). What "Akta Manniskor" gave me was to see this structural idea of multiple and loosely connected stories play out greatly in a science fiction TV series that is based on a very distinct novum: the development of very advanced humanoid robots ("hubots") and the beginning of some of the developing self-consciousness. The show tells multiple stories that portray how "hubots" take place and impact society: A family brings in a robot-maid, with the mother fearing that this hubot will replace her and the father having sexual fantasies about it; an old man gets attached to its malfunctioning hubot and protects it against the strict "old-woman maid/nurse" hubot that his family (who is not visiting him enough) gets him; a man loses his wife because of how badly he treats her hubot, for whom she has more feeling than for her husband; there is a big sex-hubots market that the show gives a glimpse to; and the integrating storyline begins with a guy helping the group of self-conscious hubots, who has lost the female hubot he is in love with to a group of black market hubot thieves and traders who reactivate her and sell her as new to the family from the first storyline. "Akta Manniskor" showed how this structural narrative model can work. Differently from a show like "Westworld", which has a similar novum, "Akta Manniskor" played out in the real world, told stories that happen in the house next door, in parties, in the trade and economics,

in the politics, in the darker and more underground wakes of life, and also in the crime-cops arena, managing to tell those stories in a captivating way by doing excellent work of building characters and giving each of the stories a strong and original conflict. I have to say that I loved it, and it resonated strongly when developing "Trans-H".

For one or two months I floundered between the ideas, with "The Last Just Human President" dropping out of the decision quite quickly. It felt that I do not have enough knowledge and relation to the world of the American president which will increase the chances of writing a cliché. Thinking about making it the prime minister of Israel or of some unknown country seemed at the time as a bit weak (though this thought, as with many others regarding this creative process, could someday change).

Between "Crisprs" and "Trans-H" it was a close decision for me. In the end it felt, with "felt" being the right word because it was not too educated and rational, that "Trans-H" better fulfilled what I wanted to achieve in this endeavor, seemed a little more original and different, and was more exciting for me to write. Also, I felt more related to it, energized to write it, and thought I could do a better job at it. I guess these are the right reasons for a writer to choose what to write. It could be that watching "Akta Manniskor" had its impact on the decision as well.

With this direction and sense of focus, but with many more creative decisions to make and challenges to solve, I set out to write the new screenplay.

3.8 The writing of "Trans-H" pilot screenplay

In this chapter, I will refer to all kinds of challenges and decisions in writing "Trans-H". I would suggest to the reader that this is a good point to read the screenplay.

The initial development of the "Trans-H" idea already gave me a solid base to approach the screenplay – there were basic characters (some known from previous drafts), the major storylines and so on. But there was still a lot of work to do. I started by writing to myself more about each story, possible story beats, sharpening the intensions of the characters and their obstacles, and looking for connection points between the stories. A good strategy

offered by John Truby in designing a series that has multiple storylines is to make the protagonist of one story the opponent of another. So, for example, I had Josia as the hero of his own story fighting to offer affordable enhancement and seeking revenge on the Newman corporation, but because he operated on Sophia who will not wake up, he is also the opponent of Brad Marzano, Sophia's father. I also looked for possible changes in allies and opponents; for example, Sierra Newman and Aron Jacobs are allies in promoting enhancement as a way to make the world a better place, but covertly they are rivals since both want to control the selection process that decides who will be enhanced and who will not. Writing all those ideas down built a large enough list of story options and directions, sometimes even scene ideas, that I could rely on to write the screenplay.

3.8.1 Designing the human enhancement technology of "Trans-H"

By that time, I better understood the importance of defining the technology/novum in a more precise way. In "Crisprs" it was genetic treatment given to children by injection. There were reasons for it being children: their brain is still developing, and the edited genes will have more impact. The point of the injections is two-fold: first because it is an effective way to make sure the material spreads correctly in the body; and second because it can be painful and making the process difficult for the children and their parents. But that was "Crisprs", and in "Trans-H" I took a different direction and went solely with brain implants. There were several considerations, attributes, and consequences in this decision and in defining the "tool":

- Brain implants are a relatively viable technology. We already use brain implants for Parkinson's disease to regulate the production of certain neurotransmitters. Combine that with an already tested technology of tDCS that is proven to improve cognitive performance with the use of specific currents, and the platform to develop Cognitive Enhancement implants seems to be a matter of time. In fact, as covered in section one, there are already plans to develop such things.
- Brain implants, as opposed to genetical transformation, is a kind of enhancement that people can decide to go through. "Designer babies" are not relevant to those who have already been born; the "Crisprs" technology influences children whose

brains are developing, and an implant is something that once exists, most living people could have a chance of obtaining. This is also true for biochemical enhancement (like NZT in "Limitless"), but "Limitless" already used it and I wanted to differentiate, but also it is less likely that biochemistry will lead to powerful and sustainable enhancement and the biochemistry route might be a "too easy" a solution to enhancement seekers.

- The way the implant in "Trans-H" works is based on that combination but also provides the brain with "pre-programmed neural tissue", meaning the implant stimulates the brain with electrical currents, but adds artificial neurons to the brain that even before implant know their function and seek to send connections with the present neurons in the brain of the enhanced person. For example, if one asks to enhance his "lateral thinking abilities" (the ability to generate ideas and connect pieces of information to an integrative meaning. as a writer I think I would stand in line for this one) he will get a chip that already knows to think "laterally" by imitating the process the brain does when thinking laterally, except it does that much more consistently and intensely, and the chip will know to which parts of the brain to connect and interact to enhance that ability. In the process of getting the transplant there needs to be a professional that uses scanning technologies to map out the processes in the patient's brain so he could align and calibrate it with the chip. Now, almost none of what I wrote here appears explicitly in the pilot episode – but as a writer I know it and can use this knowledge whenever it is called for. I could have written a scene in which someone explains it (I had one which does it to some extent in an incomplete first draft of the screenplay) or do it in a different style, like having a "scientific video" or "promotional video" shown throughout the episode. However, I decided not to be deductive about it, but rather to follow Robert McKee's "show, don't tell" principal and to use this knowledge of how the implants work only when the drama really calls for it. However, it is important to provide the audience with enough understanding of the "novum" technology, and to do so fairly early in the story, and do it in a compelling, dramatic, and a non-arduous way. Syd Field claims (1979) that the first 10 pages of the screenplay are extremely important and should be exciting and convey the essential elements of the story. In

the case of science fiction, the technology/"novum" and its consequences are the essential elements of the story. There were several places in the screenplay in which I have used bits of my understanding of the scientific and technical aspects of the enhancement implant technology. Here is a scene, which is quite early on in the story (page 4), to exemplify it:

MOMENTS LATER

Ezra makes a long, deep cut behind Josia's right ear.

SECONDS LATER

Ezra picks up a strange looking IMPLANT DEVICE: it looks like a small, transparent, electronic JELLYFISH, with circuits as it's flesh and many tiny, elastic, silicon arms.

Josia's head is wide open from the cut behind the ear. His BRAIN is showing.

Ezra carefully inserts the implant into Josia's head, slowly starting to connect it to the organic brain using some sort of a STICK which resembles a hot-glue gun.

When the implant is attached to the brain, it looks like an extension of it.

(p.4)

This is a scene in which Ezra, Josia's brother, does the implant operation on Josia. The scene is meant to create a visual representation of what the show is about, so it takes place quite early. The shape of the implant, the process of connecting it to specific neurons in the brain, and the visual end result of it integrating into the brain are derivatives of a preliminary characterization of the implant technology and how it works.

This is the next scene that is interwoven with more information about the implants:

INT. EZRA'S LAB -- DAY

Josia wakes up abruptly. It takes him not more than half a second to fully experience the enormous pain. His face twitches. He screams.

Ezra is next to him, leaning towards him, stroking his head with concern.

EZRA
It will take some time, but it will go away.

Josia tries to say something, but it's difficult.

JOSIA
G... Give... Sl... Sleep...

Ezra bites his lips, looks at Josia with empathy.

EZRA
I'm sorry. I can't have chemicals messing with your neurotransmitters at the moment. Your brain is rewiring.

Josia looks at him pleadingly. This pain is tormenting.

(p.5-6)

The extra knowledge in this scene is that the brain is "rewiring" and that pain killers might interfere with this process by changing the neurotransmitters system. It is a very small bit of knowledge that is placed in a scene in which there is a dynamic between the characters: Josia is suffering from the pain of the procedure and his brother has to contain his suffering but deny the solution. This scene is also important to the next point about the technology.

- Going through the enhancement implant process is not an easy thing. It should be complicated and very painful (as having anything placed in your brain could be). The enhancement technology being dangerous and/or painful is a motive that is used in some of the existing enhancement stories (like "Limitless" or "Flowers for Algernon") and was present in this process from the beginning: in "California Republic" the whole story begins with the death of Rob Rand who goes through unsuccessful genetic treatments; in "California Nation" the story begins with Vanessa waking up from a 5-year catatonia caused by her self-experimenting with enhancement implant technology. The purpose of making the process dangerous,

painful. and frightening is that characters who decide to do it must have strong enough reasons so they can face the consequences. In “Trans-H” the risks are: (a) There are pains after the operation which cannot be moderated with painkillers.(b) There is a risk of not waking up and staying in a coma for a long time, as what with happened to Sophia. This is a risk that in the reality of the show I decided has been solved (there might be a coma, but people wake up from it eventually), yet it remains a common fear in people. The reason for me to “lower” this risk in the reality of the show is to find the right place of danger/hope – if there is a really big and probable risk, then very few people would endanger themselves with the process, let alone their children. Making it painful, slightly dangerous but mostly safe and with a long healing process (and very expensive) seemed like the way to present it as a procedure that people will decide to have in a volume that impacts society but remains a serious and heavy decision to make. (c) When the brain “rewires” it might go through a time of hallucinations, disorientation etc. This is also a stage in which things can go wrong and people might “lose” something, change a little more than they wanted to, or things similar. People who go through the procedure might go through this stage when they are unconscious or after waking up, but even the scientists who work at enhancement in this world cannot fully explain it or know why someone goes through it awake and another unconscious.

- The hallucination/disorientation phase is not just a side-effect or part of the medical aspect of enhancement, it is also a window for me to face a question that interests me: what happens in the mind of someone whose cognitive abilities “jump” considerably all of a sudden? Is it being with “OK intelligence” one minute and the next minute being able to do many more things? I thought it should not be the case that an enhanced person needs to adjust to his/her new abilities. Moreover, I thought this is a big disruption to the brain and to the mind, and that the mind has to begin “rearranging” itself - re-organizing what the person knows. I looked for a way to approach that process and thought that it might happen in a dream-like setting (which could also provide the screenplay with intriguing scenes and a different tone). In those dream-like scenes there could be metaphors for what is going on

inside the character's mind and how he subconsciously learns to operate with his new strengths. Two scenes like that entered the screenplay – this is the first of them:

EXT. A DAM -- DAY

Josia is standing in a VALLEY, in front of a medium-sized, improvised DAM, made of an eclectic collection of bricks, planks, squeezed clothes and anything else that can hold the water.

He looks at the dam, like guarding it. He hears the sound of the water on the other side, swarming, announcing its intention of breaking through the dam.

Suddenly a little bit of the dam gives in, and a narrow but strong stream of water breaks through it.

Josia hurries and plugs the hole with his hand.

Another hole opens. Josia tries to reach his arm towards it, learning that his arm can extend longer than its normal length to cover that hole as well.

A third and fourth hole opens. Josia discovers he has more hands, and he can extend them to plug the holes as well.

Seconds later Josia has more arms than an octopus, all busy covering holes in the dam. It's not easy, though, and the effort clearly shows on his face.

EZRA (O.S)
Josia...

(p.5)

Josia begins the story as a schizophrenic. His brother takes him out of the psychiatric institute and suggests he tries and deals with the schizophrenia with an implant that will enhance him cognitively. The implant is supposed to help Josia "overthink" his schizophrenia, using his better rational thinking to compartmentalize the disturbing thoughts (a similar coping with schizophrenia has been presented in the 2001 film "A Beautiful Mind" about the genius mathematician Robert Nash; the film received 4 academy awards, including best film). The dam, the breaking apart barricade that is about to cave in to the turbulent water on the other side, is metaphoric to the threat of "drowning" by a turbulent inner world, and the extra arms growing out of his body are his brain making use of the new abilities to stop it. Now, this is an explanation I am providing only because I need to disclose my writing process and my intentions in this doctorate -

saying the meaning of a dream-like scene is irksome. It does, however, seek to convey something emotional about the inner process that Josia is going through while sleeping after the implant: there is danger, there is water which threatens to take down the hero, the dam is weak and will collapse at some point, and through some unnatural occurrence (the growing arms) this danger is barely contained. All this, the fear and the struggle, are things that happen inside Josia's mind.

Another scene showing this subconscious process is related to Sophia:

INT. DREAM WORLD -- SURREAL TIME

Sophia stands and looks around her. She's in a weird place: a TREE grows out of the floor. On the tree there's a STRANGE CREATURE, very long female body but masculine head, eyes shut. The creature is sitting on the tree, but his extremely long four arms are holding and playing A VIOLIN MADE OF LIQUID. There's no sound, though.

A HORSE is frantically running around in circles - but he's far enough so he won't hurt Sophia.

The whole place looks like a Salvador Dali painting.

MASKED MAN (O.S)
What do you want, little girl?

Sophia turns and sees THE MASKED MAN. He looks like Josia with the mask, the sunglasses and the hoodie, but of course that's not really him.

The masked man is sitting on a CHAIR, identical to the one in her room.

SOPHIA
I want to go back to my mom and dad.

MASKED MAN
Oh. Sure. All you have to do is to play the violin.

Sophia turns and starts walking towards the tree, where the creature who plays the silent violin is.

Suddenly the masked man appears in front of her, sitting on his chair and blocking her way from the tree.

MASKED MAN
Not so fast, Sophia. You will only have one shot. are you sure you're ready?

Sophia's face falls.

SOPHIA
(frustrated)
No.

MASKED MAN
So why don't you go and make yourself ready?

SOPHIA
How will I do that?

The masked man shrugs and vanishes.

The creature and the violin vanish as well.

(p. 61-62)

This is the last scene of the pilot screenplay. It has several purposes. First, it shows that Sophia has some hope of healing - she is not "braindead" but her mind works, and if the viewer/reader makes the connection he/she might understand that she goes through something similar to what Josia went through when he had his implant (and it is basically the same implant that Ezra designed). Second, it is supposed to be a little sad: Sophia wants to go back to her mom and dad, and in the scene, this is portrayed as a task which will be difficult – she has to play the violin, but the violin vanishes. Even sadder – Sophia does not know this, but her mother is dead (the viewer should know it). Third, as with Josia, this scene takes a glimpse at what Sophia's mind needs to accomplish in order to function better in real life: she needs to play the violin. Playing the violin is something her mother wanted her to excel at. The masked man, by the way, is Josia, who does these operations and contacts his clients wearing a mask for security reasons – so that is the way Sophia knows

him. In her mind's eye she cannot tell if he is there to deny her from coming back or help her. Forth, this scene is a way to end the episode in an intriguing way and open another storyline that takes place in Sophia's sub-consciousness. This is using a story form similar to "Alice in Wonderland" or "The Wizard of Oz", or somewhat more recently the excellent British TV series "Life on Mars" about a detective entering a coma in the present but waking up in 1973 England and looking to find out how to return. In this story form the hero is moved to a surreal world and wants to come back from it to his real world, and to do so he needs to go through some kind of an adventure which (very roughly put) will teach him/her something about himself. For me this storyline is a chance to try and play with some ideas about the brain and the mind amid enhancement, and also to enjoy myself writing it.

- Another attribute of the implant technology in "Trans-H" is that you have to choose the abilities you want to enhance. Earlier I gave some of the "scientific" background about being specific with the enhanced abilities. Here is a scene from the earlier and incomplete draft of the screenplay, in which the Marzano couple inquire about enhancement for Sophia. This is a more informative scene about the technology, which I decided not to include in the final screenplay because I wanted to approach the "explaining" of the technology differently:

JOANNA
What will she be able to do?

SERVICE MAN
Well.

THE SERVICE MAN shows a menu on the touch screen, detailing all kinds of possible enhancements, including: memory & categorization bundle, calculation & deduction, mind-data connection, flow of ideas, "what if" thinking, hightened sight, mood regulation, hightened smell & taste, self control etc.

SERVICE MAN
You'll have to choose. Some things can go together, and some enhancements can boost other skills as well, especially with children.

JOANNA
No musical talent?

SERVICE MAN
Not specifically... But sometimes it increases with other installments, like the memory and categorization or the self control.

BRAD
How much?

SERVICE MAN
It depends on the combination and some factors which are evaluated in the screening.

JOANNA
Let's say for all of it.

THE SERVICE MAN laughs.

SERVICE MAN
That's impossible. That's too much for the brain to absorb. We don't want Sophia to cross the Pattel barrier. We usually combine not more than two. But to demonstrate let's say sophia will get the hightened learning program which helps kids develop many other skills and the common calculation and deduction, it's gonna be...

The number 3,668,000$ appears on the screen. BRAD & JOANNA are shocked.

Another character in "Trans-H", Andrea, gets an "empathy implant" that gives her the ability to identify and interpret body signs that disclose people's emotions. She goes through a learning process of using this ability and it helps her stop a bank robbery by sensing the robber's mental state, although in the process she misinterprets something and nearly makes things worse – this goes to differentiate enhancement from plain superpowers: the enhanced person gets his abilities as a kind of "add-on" and needs to learn how to use it. Later in the episode she finds that reading regular people's emotions becomes easy for her, so she practices on enhanced people who are harder to diagnose.

The specific decision to enhance a certain ability is also a tool for telling the story about the characters through them choosing the ability they feel they lack or need to live a better life. This is the case when Joana asks about musical talent for her daughter (in that version of the screenplay she becomes envious of the children who play beautifully and frustrated that Sophia does not).

- A very important decision to make about the enhancement technology is how powerful to make it. Does being enhanced mean being so much smarter or stronger than regular people? If that is the case then really it is a separation point for humanity, making almost every conflict between enhanced and regular people a lost cause. In a way it will make the story about both not that interesting – the regular people will be so obsolete that their story will be about characters who are weak and doomed, and the enhanced will be hard to approach dramatically without being unreliable. I could be wrong about this judgement or failing to see the dramatic potential in telling a story of a world with too advanced enhancement technology. In "Trans-H" the enhancement technology already has a powerful impact, and it makes people possess cognitive abilities that very few genius people, if any at all, have. They can calculate very fast, intake and process information and knowledge quickly and with amazing accuracy, and maybe they can read people better and come up with better ideas. Making enhancement specific to certain pre-ordered skills makes it even more confined and keeps people who had it as still "humans", but with all kinds of effects and meanings of becoming someone enhanced starting to play out. Here is a scene in which I tried to show how the 13 years old enhanced Vanessa uses her abilities – she is smarter than anyone by a long way, but she is still a teenager:

ALBERT (50's) is running the meeting, listens with great care to the woman speaking.

WOMAN SPEAKING
...nearly twenty-three percent of our employees are due to a seniority increase next year, which will mean...

Sticking out in the crowd is VANESSA (13), a stunning girl, carved out from the best of a blend of origins, light blue eyes, some exotic features, Indian complexion. Vanessa is bluntly working on her very advanced CELL PHONE.

Vanessa is going over pages very fast, takes less than a second to capture every page. The screens show all kinds of charts and data, and she is sipping it all in.

Her behavior is felt. Even the woman speaking moves her eyes between Vanessa and Albert, who signals her to continue.

WOMAN SPEAKING
...an estimated one point five million dollars to our budget.

VANESSA
(interrupts)
One million three hundred and twenty-six thousand, five hundred and forty-two.

WOMAN SPEAKING
Ummm, maybe.

VANESSA
(without raising her eyes from the screen)
Not maybe.

WOMAN SPEAKING
All right. Nevertheless, we need to allocate the resources for that.

VANESSA
(again, interrupting)
That's easy.

Vanessa starts pointing at some of the people in the meeting.

VANESSA
(calmly, but decisive)
Him, her, her, him, him, and... (points to the woman speaking) you. Your combined salaries will cover the entire raise, with a hundred sixty-two thousand of change which can be referred to as R&D. In fact, according to the new strategy, their positions are unnecessary. Here. Problem solved. Anything else you need me to sort out?

The room is quiet. Many embarrassed faces are looking at Albert, whose eyes are on Vanessa, trying to figure out how to respond to her speech.

ALBERT
(gently)
Doctor Jacobs-Baer, this is not the way we want to do things.

VANESSA
I don't understand. Don't you want to clean the air?

ALBERT
Of course. We ALL do. That's our job.

(p. 19-20)

- The last aspect of designing and "mastering" the technology of the story I want to discuss is the figuring out of the organizational reality of it: who manufactures the technology? Who sells it? Is there a competition? What is the legal status of it? Who else is involved or has an interest? How does the distribution of the technology operate? In "Trans-H" the implant technology is a monopoly of the big "Newman" corporation that made its money from it. It is expensive and distributed through specialized clinics. As a commercial product it is under-regulated with the law and public establishments are not quite catching up with what it does and how it affects reality, which causes many people to have different opinions and agendas about it – from banning it, restricting the rights of the enhanced, calling enhancement "unholy" and more. The very high prices of enhancement and the secret screening process which gives "Newman" complete control of who gets to be enhanced and

who does not, are met with a small reaction movement of biohackers, like Josia, who try to service people who desire enhancement but cannot afford to do it with Newman's implant, or failed the screening process. Newman used its resources to influence the procedure by which new enhancement products can enter the market, and basically made it impossible to conduct research and develop serious competition. Ezra, Josia's brother, encounters that limiting procedure at the beginning of the screenplay:

INT. SMALL CONFERENCE ROOM -- DAY

Ezra, shaved head and a scar behind his right ear, is lecturing in front of FOUR DISTINGUISHED PEOPLE. His presentation shows how the implant works.

COMMITTEE MEMBER
So you're telling me you can manufacture enhancement implants as good as Newman's, at one percent of their price?

EZRA
Less actually, and better. Than Newman I mean.

COMMITTEE MEMBER
It sounds too good to be true.

EZRA
Newman inflates the price. An enhancement implant shouldn't cost millions of dollars. Until now no other development passed this committee, so there's no competition and Newman can keep their price high. But, as you can see, I've come prepared, and the data is solid.

There's silence in the room. The committee members look at each other.

COMMITTEE MEMBER 2
You worked for Newman, didn't you? Until...

EZRA
Two years ago.

COMMITTEE MEMBER 2
So... Are you aware of the regulation that determines a minimum of five years period before applying for product approval in the enhancement industry?

EZRA
It is two years.

COMMITTEE MEMBER 2
No. It's been recently updated. Maybe the new criteria wasn't uploaded to the website already, something that we regret and will fix shortly. You probably understand that the enhancement industry is based on very advanced knowledge and expertise, created with billions of R&D dollars.

EZRA
There is no industry. There's just Newman.

Member 2 shrugs.

COMMITTEE MEMBER 2
A place where you worked at until only two years ago, and most likely used the knowledge you gained there in developing this product.

Ezra closes the presentation.

(p. 9-10)

This event triggers an occurrence that, in a very short time, will result in Ezra's death. Newman corporation really does whatever it can to preserve its monopoly.

All the points made so far were about me, as the science fiction writer, who knows the differentiating technology of the story in a detailed and precise enough way, and how to make the decisions about it creating dramatic potential and weaving it into the story itself. It is the manifestation of the "know your technology" argument I presented in part 1.

3.8.2 Designing the "Trans-H" story world

As claimed before, the decisions about creating the story world are strongly related to the novum, because it should be a world that is influenced by the technological change-maker and in this case it needs to be a world in which the major players that deal with the technology (create it, control it etc.) operate. Those requirements were important in keeping it in San Francisco, the place that is at the forefront of technological development (also I got used to it throughout this process). However, as opposed to the "California Republic/Nation" concepts, the story can basically move to other places where a technology like that can be developed, maybe even Israel.

The time period of the story is influenced by "Akta Manniskor" – it is the present or a very near future, but an alternative one. In "Akta Manniskor" it is our world, except that it has humanoid robots serving us, and in "Trans-H" it is our world, except that it has a cognitive enhancement implants industry. The strategy of telling a story about a world like ours but different because of a clear, distinct novum, has been discussed previously, and I chose it because it helps to create more empathy and attachment to the characters and better allows the telling of personal stories. It is also a way to have the audience accept the reality of the show as a likely scenario, maybe even in their lifetime. Watching "Westworld" (robots growing consciousness) makes us fantasize about visiting that futuristic theme-park in which the story takes place, but it does not make us think of ourselves living in this world. Watching "Akta Manniskor" (robots growing consciousness) is making us fantasize a bit less about living in it, but it does make us think about how we might live, act, take a stand, and cope in it. That is one result of making a relatively distant world as opposed to a relatively known world – and the second is more suitable to my writing goals.

For this reason, I have not introduced other new technologies (except for a very few restricted things that are the result of enhancement – the development of enhanced people) and had the basic social and institutional structures resembling ours.

Among the four dimensions of science fiction writing that are used to inspect the creative writing process, the dimension of premise/storyline has been discussed in the previous chapter, and the dimensions of technology/novum and story world have been addressed here. The fourth dimension is the theme.

3.8.3 Shaping the theme of "Trans-H"

The concept of "theme" is not that simple to define. It can sometimes refer to a value or an overall message that the writer wants the audience to adopt or to consider. In "California Republic" and "California Nation" the theme could have been of that sort and warned from the scenario that a small group of people who will have access to human enhancement technologies will use it to create a social system that will make all the others inferior and maybe even redundant. Another approach to the theme is not to try and convey a specific message but rather to explore different angles of a reality or an issue, making it feel more complex and complicated and by doing so creating a debate and raising it to the audience's awareness and thought. "Trans-H" wants to achieve that, and if I were to try and sum up its theme in a sentence, it would be "human enhancement can change life and humanity as we know it, so it is up to all of us to take responsibility for it". It might be a more generalized statement than the earlier warning sentence but it actually demands much more to be effective: it calls for a story that engages the audience enough so that they will empathize with the different aspects of the theme and requires showing different sides and different nuances of the theme.

One of the tools I used in developing the series is brainstorming many questions, problems, and possibilities about society and morality related to human enhancement, some inspired or even "copied" from the ethical literature and some my own. Afterwards I wrote possible storylines or events or character attributes that might play out that question or problem. For example, one of the questions I had was what people will do when they see other people getting enhanced, maybe advancing in life more than them because of it, leaving them no more than crumbs and leftovers from the feast of life. This is a personal and very real problem once the reality of effective human enhancement kicks in. One of the ways to look at it is "if you can't beat them join them" strategy which would cause many people, even if it would be financially hard for them to afford it, to make the extreme effort to have at least one family member enhanced, counting on him/her to lead them to a plausible financial and social status. There are two stories in the series with this starting point: the Marzano family who wants to enhance Sophia, and a young loving couple, Maria and Josh

(their story is not in the pilot screenplay but is planned for future episodes). Josh is a failing musician who gets little work because of enhanced people taking over the music industry, and Maria is a security manager reduced to simple security roles because of advances made by enhanced people. The couple decides to "bet" on Maria, who, coming from a lower background, shows higher motivation to be enhanced. They use all their money and resources, also taking out loans, and get Maria to go through the operation at Newman. The procedure is successful, and after the adjustment period in which Josh takes care of Maria, she becomes brilliant with data synthesis and deduction. She is then quickly hired by Sierra Newman, who likes her very much during the enhancement screening process (Sierra always makes the final decision of who will be cleared for enhancement), to be the head of security for Newman. This is where we meet her at the beginning of the series. However, another question I had in my files was what will happen in a love relationship when one of the two gets enhanced. Will the love remain? Will the enhanced and the non-enhanced be able to communicate the same, share feelings, and keep the mutuality that many loving relationships need? Does the survival of love depend on the second person to be enhanced – and will this action really be enough (and there is a deeper question – will the enhanced person remain the same person)? In the story, it is envisaged that Maria will have a dilemma: on the one hand she quickly finds that she does not really love Josh anymore, that she finds him boring and beneath her. On the other hand, she feels obligated to him after everything he did to have her enhanced and look after her. Of course, Josh feels that he himself is caught in that situation as well, knowing that he is dependent on Maria in some ways, but causing him to always be the inferior one. Josh will cheat on Maria, who will easily find this out but ignore it (if that primal creature needs to have his urges taken care of – then let him), but later on she will give Josh an "intervention style" ultimatum: I want to experience love again, so get enhanced yourself or get lost. But even if Josh does get enhanced, can their relationship really survive? Will it be the same love as before? This is material for season two already.

The familial and/or personal motivation to get enhanced in this changing world exists, as mentioned, in the story of the Marzano family. Joana, Sophia's mother, is the one who pushes for her to be enhanced. This is a scene in which she talks to Josia, to whom she

approaches to find out about the enhancement procedure, and answers his question for her reasons:

JOANA
Is there risk?

MAN VOICE (O.S)
Every operation has risks. This one is no different.

Joana nods for understanding, as if he can see her.

JOANA
Aha.

MAN VOICE (O.S)
However I have a different problem. Until now I only enhanced people who made the decision for themselves. In this case you make the decision for your daughter. So I need to be convinced that your reasons are solid.

Joana moves a little in her chair, preparing herself for a speech.

JOANA
Sophia, That's her name, is sweet. She's really the sweetest, easiest girl. Never argues, always helpful. But I can already see she doesn't stand a chance. (beat) there's this kid who was in her class, he's still in her violin class. His parents have the resources and they had him enhanced, and he's just perfect. He skipped to high school already, won a big science prize and he plays... (takes a deep breath) very beautiful. (beat) And Sophia, everything comes so hard for her. And I think, how will she be when she grows up? How could she stand with someone like him? And many others? She will be... What? Their slave? At first I thought
(MORE)

JOANA (cont'd)
that this kid's parents should be ashamed, that it's like cheating, but when I heard him play I got it. That's the way things are, and going to be. And I don't want her to be left behind.

(p. 44-45)

Another side of the decision to be enhanced addressed in this scene is when Josia tells Joana that one thing that bothers him is that she makes the decision to be enhanced for her daughter, and he is used to people making that decision for themselves. However, as concerning as it may be for him, he is not drawing a line in this he and respects Joana's responsibility to make this decision. Josia is aware that making this choice for a child is not to be taken lightly, but his attitude towards enhancement is positive so in his eyes Joana is doing the best for her daughter.

When reviewing the first drafts, I have shown how enhancement is colored in a negative way by positioning the protagonist (Amos and later Vanessa) as someone who acts against it. There were other techniques to achieve that, like the dystopian first scene of the soldiers with the brain chips. In "Trans-H" I have intentionally started the series by giving enhancement a positive association: in the first sequence, Ezra uses enhancement technologies to help his brother Josia to cope with schizophrenia; in the second sequence another character, Andrea, uses her "empathy implant" to stop a bank robbery, and even to show compassion to the robber and help him. I assume that many people will regard developments in human enhancement technology as frightening even without me showing how detrimental it may be in a TV series, so opening the story and later maintaining that it might promise considerable value to humanity as most transhumanists claim, is very important. It establishes the upside of enhancement before showing all its social risks. Unlike Amos, Josia is a protagonist who is enhanced, and unlike Vanessa who suffers personally and morally from enhancement, enhancement helped him to ease his own suffering and he promotes it in practice.

Another aspect of the theme is manifested in Josia's story. Josia is following his dead brother's footsteps in trying to provide an alternative to the ridiculously expensive and

allegedly discriminative Newman corporation, which is a monopoly. Newman's terms of enhancing someone are not accessible to everyone. Since enhancement in the beginning of "Trans-H" is a business product, not a medical service, Newman can make such policies as it pleases. This is a continuation of the same central thematic point from earlier drafts – that the few who control this technology will use it to better themselves at the expense of the rest of us, except that in "Trans-H" the battle has not been decided yet. Josia can be likened to a "Robin Hood" who enhances people and lets them decide the price because he believes that everybody has the right to be enhanced, it is a personal decision, and restricting it is immoral and unjust.

For this reason, Josia, with co-operation from Aron, sets out to attack Newman's screening process. That attack is still covert, because Aron knows Sierra and knows that doing it too upfront will be easily detected and thwarted by her (this is why it is not specified too bluntly in the pilot screenplay). As an aside, Aron and Josia have completely different goals by expropriating the screening process from Sierra – Josia wants there to be no screening, and Aron wants to control it himself.

In "California Republic" I called the leading corporation "SW" to hint at the fascist danger of enhancement. In "Trans-H" there is the night club for enhanced people: "The Fifth Column". It is not yielding "Fascism" with the same volume as "SW", but it does hint at some danger of having people from the inside undermining the accepted order.

The purpose of "The Fifth Column" is to answer another question that interested me: what does an enhanced person do for fun? Is his/her taste, entertainment, and artistic needs identical to those of regular people? "The Fifth Column" is the night club for enhanced people only (the segregation is important and hopefully reminiscent of other "members only" clubs). It is not just a place to give the series an "underground" feel, and not just a place for Vanessa to escape to in her search for excitement; it is also where I could be a little imaginative in speculating on the experiences enhanced people seek. What follows is a scene where I try to imagine the music played at this club:

FIFTH COLUMN - MUSIC ARENA -- SECONDS LATER

Vanessa walks into the biggest hall of the club. A BAND is playing on the stage a piece which sounds like several different songs playing at once.

The AUDIENCE is small, everyone listens privately. Vanessa focuses her attention on the stage.

A POV on Vanessa from the back of the club gives the impression that someone watches her.

The song ends abruptly, with no warning. The band members look at each other and start playing the next song - an extremely fast song that sounds like squeezing something by Pink Floyd into 10 seconds.

The song has a great impact on some of the people in the audience and they shout out of joy and energy.

Vanessa smiles too, she liked it.

THE BAND LEADER
Our last song is a classic.

They start playing again. At first, it sounds like one very long, stressful note, but after a while, the note slightly changes and underneath it, hardly noticeable, there are complex harmonies. Vanessa closes her eyes, letting her body get wrapped by the music. Finally, she gets a taste of what she came for.

(p. 30)

3.8.4 Exploring the "cool" potential of human enhancement

One thing that did not exist in the previous drafts was trying to have some "human enhancement FUN". Russell spoke of fetish for technology as an engine of science fiction, and I write about human enhancement to some extent because the experience of being enhanced arises my curiosity. Trying to make it exciting (which my best standard for is that it excites me), and providing a peek into this experience that could be a little different from our own, can help give the series an edge – and also help the theme by giving human enhancement more "gravity". Here is another scene at "the Fifth Column" that tries to push that button:

FIFTH COLUMN - PHONE BOOTH ROOM -- SECONDS LATER

Vanessa enters a room full of VINTAGE PHONE BOOTHS. She starts strolling along the booths, watching the variety of people inhabiting the booths - different colors, ages and origins.

The people are wearing a HEADSET, which covers the ears and the area of the implant. They all stand with their faces to the SCREENS which hang where the phone itself supposed to be.

Vanessa finds a free booth and enters it.

On the screen: "PUT THE HEADSET ON". Vanessa complies. A menu appears: "CHOOSE YOUR EXPERIENCE". Different categories show up. Vanessa picks "SEX", which leads to a menu of different sexual experiences. Vanessa presses "RAPE", but gets a banning message: "THERE'S AN AGE RESTRICTION".

Vanessa now goes to the "DEATH" menu, and chooses "VIOLENT DEATHS", and again - banned from entering.

Next pick: "FALLS". Vanessa chooses "FALLING FROM SPACE". This time it works.

The screen says: "PLEASE CLOSE YOUR EYES". Vanessa does so.

Her face show that the experience begins, and she slightly looses her balance, but after the initial adjustment the same ol' bored face she wears lately takes over.

(p. 28)

In this scene I am counting on the audience “to fill the void”. The experience itself does not show, and the viewer could imagine it the way they want, while picturing this 13-year-old girl experiencing it. There are other scenes where I tried to show the exciting side of enhancement, like the “bank robbery” that Vanessa and Andrea commit.

This scene is also supposed to deepen Vanessa’s character: she is an enhanced and bored teenager for whom everything is easy, and who looks for an intense challenge or experience. Some of her future story of clashing with her father, Aron, who “made” her, is hinted at by her sneaking out and locating the club without him knowing. This is also opening a nuance that is still not evident in the pilot screenplay of the meaning of “enhancement in the family” - raising an enhanced child. Andrea, who is 60 years old, is enhanced and shares Vanessa’s need for new experiences. Her way to achieve that is by

having new implants (which is not allowed by the Newman protocol) to gain new capabilities and experience her mind changing and growing, and to cultivate a habit of robbing banks. She identifies what Vanessa seeks (having a character who can read minds is an interesting narrative tool, and also makes another enhancement possibility present), and she is not just talking with her about it but takes her to join her in experiencing the exciting adventure of robbing a bank. This is also raising the question of the enhanced person becoming selective regarding the law. This point is valid, even though Andrea ends the robbery like that:

MOMENTS LATER

Most of the drawers are open. Vanessa opens the last one.

VANESSA
Yes.

She's happy, joyfully skips between the open drawers and takes out the money in them. She acts more like a 7 year old, not the 13 year old enhanced doctor of civil engineering she is.

When she emptied the drawers...

VANESSA
Six million, two hundred and twelve thousand, four hundred and sixty. Left the pennies.

ANDREA
That's cool, Vanessa. (beat) now put it back.

VANESSA
What?

ANDREA
You're short on money?

VANESSA
No...

ANDREA
So there's no reason to take money which kind of belongs to hard working people. You remember how much was at every drawer?

VANESSA
You're nuts, you know? That's why they ban enhancing over forty now? Cause they saw it's making you crazy?

Vanessa sighs, but starts returning the money to the drawers.

Andrea examines her while she does it, "reads" her and smiles.

ANDREA
You're welcome, kid.

(p. 37-38)

A personal confession: this is probably my favorite scene of the screenplay. I like the 13-year-old/60-year-old female "odd couple", the motivation to do something edgy because it excites you, the loosened Vanessa who is having fun, and Andrea separating the challenge from its moral consequences. I think it still preserves the question of Andrea and Vanessa committing illegal action just because they can and because it is fun. Do enhanced people set their own morality? Well, today everyone to an extent sets their own morality, but when enhanced, this "freedom" to decide what is right and what is wrong is heightened because the enhanced person can execute much more. I also like "slipping in" other enhancement related information that might create curiosity for the continuation: that enhancement is only for people younger than forty (Andrea had it for the first time as part of an experiment, and later had pirate implants with Josia).

3.8.5 Setting up the antagonists

A very important dramatic tool in order to address the theme and build the story is the antagonist. In a series that wants to last for a while, several characters are serving as protagonists for some other characters so there will be plenty of conflicts to carry the series, and to have characters presented as sometimes good and sometimes bad. Usually there is a storyline which is more central than others and its protagonist is the overall protagonist of the series. In this case Josia's story is more central and gives the series an overall framework, and the antagonist of it is Sierra Newman.

Sierra Newman is a black, impressive, 45-year-old woman, who is the founder and the owner of the Newman corporation. As a monopoly in the enhancement business she is in the position of shaping the reality of enhancement and even more so – over time she can shape the entire society. She understands that. She was brilliant for starting Newman and leading the development of the enhancement technology (although it is not clear as to how ethical she was at doing it), and after implanting herself with several implants – something she does not allow others to do – she strives at being superior. She acts to preserve her monopoly, destroy possible competition (like Ezra and later Josia), manage and contain the opposition to enhancement in general – as she does in Aron's committee -and gradually strengthen her grip on every establishment she desires. By selecting who gets enhanced and hiding her screening process, she can "grow" an elite that is convenient for her and loyal to her.

Except for making her strong and powerful, in this type of a series it is crucial to give her a reasonable, relatable side, so she will not be just "evil" but someone to whom on some points and sub stories viewers can accept her views and relate to her. During the pilot screenplay I wanted to portray her as not completely "evil" for the most part, but as someone whose opinions sound logical and convincing. She participates in Aron's committee to face the calls against enhancement and provides a logical claim:

RUTH
The agenda sucks. Tens of thousands of people lost their jobs by now because of enhanced people. And that's just the beginning. If we won't stop this now I'm afraid of what we'll become of us.

SOME OTHER PARTICIPANT
But there are many enhanced people already. What do you suggest to do with them? Kill them?

RUTH
Restrict their power. Deny them from running to public positions and from owning business.

The room swarms.

SIERRA
(overcoming the noise)
How is your son, congresswoman Binder?

Ruth points at Sierra.

RUTH
She shouldn't be allowed to join this committee. It's like letting the cat guard the cream.

SIERRA
Has your son fully recovered from the accident?

The room quiets down. Nasty comments, like "SHUT THAT BITCH UP", appear on the screen.

SIERRA
You know that without the spinal regenerator he wouldn't be able to walk today. The spinal regenerator was developed by Doctor Andrea Waldman, who's enhanced. Medical technologies which save millions of lives would have taken many more generations without the work of enhanced people.

Some favorable comments, like "IT'S TRUE. MY SON'S LIFE WAS SAVED BY AN ENHANCED DOCTOR" show up.

SIERRA
The people of San Francisco, and soon many other places in the world, can breath clean air for the first time in years, thanks to the unusually fast work of Doctor Vanessa Jacobs-Baer, an enhanced scientist.

Sierra looks at Aron - she "marked" him.

SIERRA
And that's just the tip of it, and much more will come. Enhancement will make the life of everyone better in ways we can't even imagine.

(p. 49-51)

What Sierra is saying is hard to deny. Enhancement holds a powerful promise to make the world a better place. She even turns to her loudest opponent and ties enhancement to the recovery of her son (the “Andrea” she talks about is the same from before), and “traps” Aron, who leads the committee by indicating that his daughter is enhanced. Those are manipulations but they are legitimate and true. Sierra is almost a messiah, and her work might result in many of the world’s problems solved. She is a transhumanist, deeply believing that embracing it is an imperative for mankind to better itself, with the fact that it is possible and that she achieves that gains more and more power serving as a proof to this claim from her point of view. Something that is not presented in the pilot screenplay is that she really has the ambition of transforming social structures: she gives a strong “corrective discrimination” in the screening process for minorities: Latins, Asians, Gays, women, Jews and of course black people. She wants to create a new and balanced elite and “stick it to the man” (although she becomes “the man” in that process). This is also a vision that one can accept and appreciate. Sierra also displays what seems like a generous, compassionate side when she offers Brad Marzano free help with the unconscious Sophia, while also indicating her feeling of responsibility to the reality she created by promoting enhancement:

SIERRA
I will help you, Mr. Marzano.

BRAD
Didn't you get it? I can't pay for it.

SIERRA
You don't have to. We'll take Sophia to our clinic and see what we can do. I'll cover the hospital bills as well.

BRAD
Why would you do that?

Sierra looks at Sophia.

SIERRA
I feel somewhat responsible.

BRAD
How come?

SIERRA
I started the whole enhancement thing. If I hadn't, you wouldn't have the need to do the pirate implant for Sophia. (beat) I can't bear the thought of what happened to her and do nothing. (beat) do you agree that we will take care of her?

(p. 54)

Yet, Sierra is the antagonist. Her being the "villain" is due to her omnipotent power, her complete control over the industry and growing control over society, her transhumanistic beliefs that border on fascism, and of course her no-boundaries moral approach in promoting her agenda. If anyone was confused about her being the antagonist (and I hope that for a little while there was such confusion), then this scene should establish it more clearly:

Sierra starts manipulating the image, zooms in on the implant, magnifies, turns around, "snips" the image from the rest of Sophia's brain. Now they can see the JELLYFISH IMPLANT sketched on the screen.

Sierra catches her breath, then touches the image of the implant on the screen with admiration.

MARIA
It's not a copy of ours like most pirates try to do.

SIERRA
No. It's something new. (beat) There are only two people who could make something like that. (beat) Indira Pattel is one, but I'm sure it's not her. The second one is Ezra Zainer.MARIA Isn't he dead?

SIERRA
Yes, he is. And somehow the implant he had was cut off.

MARIA
I'm on it.

Maria turns and walks away.

Sierra approaches Sophia, starts stroking her hair.

SIERRA
There are some secrets in that head of yours. (beat) I really hope I'll be able to learn them all without harming you.

(p. 58-59)

This is one of the last scenes in the screenplay. It tries to show several aspects of Sierra's character: first – that she professionally admires the work of a good competitor. Second – that she is occupied with destroying that competition. Third – that she has an authentic scientifically curious mind. Forth – that she will be willing, even if reluctant, to hurt a poor little unconscious girl to satisfy her goals. Sierra embodies the promise and the dangers of human enhancement.

Another budding antagonist power I tried to build lies in the Brad Marzano-Father Morrow storyline. Brad Marzano is a man who lost his job because of enhanced people developing technologies that made it unnecessary (in the future he will discover that it was Vanessa). His wife pushed for his daughter to be enhanced which he was against but felt too weak to deny; his daughter did not wake up from the implant surgery (yet) and his guilt-haunted wife committed suicide so they could pay the hospital bills – which failed because some enhanced investigator easily discovered it was a suicide and not an accident; and he wound up "depositing" his unconscious daughter to the big enhancement corporation. This is the story of a victim of the enhancement age. No wonder that Brad is drawn to the charismatic father Morrow, who (with collaboration of the anti-enhancement congresswoman) leads anti-enhancement protests, claiming it is an intervention in the role of God. Well, if you believe in God then it is such an intervention, and if this world of enhancement threw you aside you would buy into it. If I managed to do my job as a writer well enough, then Brad and Father Morrow's story should feel explosive, that violence awaits in its progression.

When I first presented the beginning of my work at Prof. Gauthier's SLAM lab's doctoral seminar, the 2016 SCRIPT ACADEMY, it was in a seminar that dealt with "crisis". I tried to present the crisis that human enhancement might bring with the analogy of the frog experiment. I gave the very same story I used to the character of Father Morrow:

FATHER MORROW
Ruth. Have you heard about the frog experiment?

RUTH
No.

FATHER MORROW
When you put a frog in plain water, everything is fine. A frog is an amphibious creature.

RUTH
Isn't it my role to represent science in this room, father?

Some chuckle.

FATHER MORROW
But then you start to heat the water up. The frog doesn't feel the change. You heat it some more, it still doesn't feel that anything is different, and the water becomes hotter and hotter, and before it senses anything, the poor frog is already dead, burnt in boiling water.

There's silence in the room. They get the metaphor.

RUTH
So, you're saying we need to pull the frog out?

FATHER MORROW
No. (beat) we have to do whatever we can to stop the water from heating. (beat) Whatever we can, no matter what it takes.

The participants of the meeting make consenting voices. Ruth's face show - she knows he's right.

(p. 60-61)

Placing your own thoughts about a subject in the mouth of a character is a possible strategy to convey your perception of the theme. However, it should be done with care, and given to the right character at the right time – when he needs to use it to achieve something. In this scene Father Morrow wants to motivate his audience and unite them around his goal. Absurdly I gave my own thoughts to the antagonists of the story, who are characters very different from myself (a fanatic reverend and a black powerful business woman; but I gave a little also to Josia – still not close to myself but at least a protagonist). It is probably better to place your words in the mouth of the antagonists because it makes it feel less didactic and gives those characters more complexity and awareness as well.

My goal in this chapter was to review the storytelling decisions and techniques I used to tell this science fiction story about human enhancement. I tried to make those decisions and techniques explicit and organize them by the pillars I perceived as crucial in writing

this story and might be true to many other science fiction stories: premise/storyline, technology/novum, story world building and theme. By doing so I hope I have managed to present my creative process and told the story of writing the story.

3.9 Reviewing the "Trans-H" pilot screenplay

I estimate that the "Trans-H" screenplay is far from perfect, but that it is good and fulfills most of the goals I had when starting to write it. Of course, those who read it will make their own judgement about it, which if negative can affect the overall appreciation of the insights offered in this thesis. But that is a professional hazard I had to accept in entering this ambitious and unorthodox research through a creation path.

At this point I hold the self-evaluation that most of the things in which the screenplay can improve are craft-related and not necessarily genre-related: the role of Josia as the protagonist could grow and he should participate more in the episode; some of the characters, like Aron, could use their motivation to be clearer; Sierra could possibly be "softened up" a little and less of a clear villain, although I am not completely sure of that. There could be other issues. However, I do believe the science fiction motives are much more in place then before, and that the novum is presented with the authority and detail that I wanted. It generates stories with characters whose lives are disrupted and altered by the consequences of the novum. The audience can relate to the characters struggling with conflicts and problems caused by the technology and its consequences.

I have sent this screenplay to be covered as well. The coverage is in the appendix and it gave a favorable evaluation of the screenplay, grading it as "consider". The coverage commented that the world building is not completely clear in terms of the time period, other new technologies that exist in that world, and other problems that this world is facing. My intention was to tell the story in a similar strategy to "Akta Manniskor" – as an alternative present/very near future that has a narrow novum and avoids overloading the screenplay with new technologies. From the coverage reader's response, it might be worth re-examining this aspect. The completion of the thesis does not mean the end of the re-write.

Otherwise the reviewer's comments were quite favorable, opening his/her evaluation in these words:

> "TRANS-H is an exciting science fiction pilot that does an excellent job teasing out the potential for future stories. The best parts of the pilot are new relationships - like Andrea and Vanessa - or characters obviously in the midst of change."

Mentioning relationships and characters that are "in the midst of change" as strengths of the screenplay are fully aligned with the goals I had when writing it.

3.10 Conclusions and generalized insights about science fiction writing

The structure of academic research is usually presented in a linear fashion: the question is phrased, the data collection method is set, data is gathered and conclusions or an interpretation of the data is offered. In this research through creation process it is less linear, with the parts being dynamic and interrelated, relying on reflection. But generally, the process is organized and framed using a similar logic - A creative challenge is set, and it possesses a core question. In this case the question is discovering the creative writing process of a science fiction TV series that tries to tell a story about the rise of a human enhancement technology and the way that it will affect humanity. The method of research and the data-gathering is writing, learning, reflecting and documenting products, and insights and reviews. The "learning" phase can be questionable within the writing process, since not every creative writing process requires learning theory or other creations, but since it is research, the learning of human enhancement and of science fiction theory and practice were called for. The dynamism of this process proved that the study of human enhancement technology, science and philosophy, of science fiction theory and literature about science fiction writing and of science fiction TV series and creations that deal with human enhancement, had great influence on the writing process and outcome. This last sentence about the learning could be placed in the data gathering but also in the conclusions.

So, by this logic, what should the conclusions or the "bottom line" of this thesis include? It is comprised from two components.

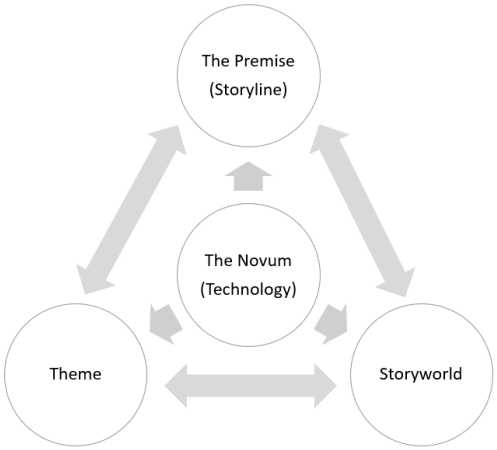
First - the screenplays themselves. They are part of the research but also a product of the process. On the one hand they stand in the same line as any screenplay ever written, more than 99.9% of them are not part of a dissertation. They might be good, and they might not be. They might sell and get produced or they might not be. On the other hand, creating them in the prism of a research through creation process highlights the possibility to look at them differently, as a creative product that corresponds with its origins, artistic zeitgeist (a fancy word for current TV science fiction), intentions, genre and subject matter and defines its unique location in the neighborhood, its unique form and hopefully statement/contribution in relation to all of those.

Second – the insights gained from the process of writing a science fiction TV series, especially when starting out of a selected futuristic subject matter, and maybe about writing science fiction in general. These insights might refine or provide some new angle to this field. They cannot claim to possess a very high validity, since they are the result of a case study undertaken at a certain time and under certain circumstances and emerging from reflection (note that a great deal of the "how to write" literature is based on writers' reflection).

Since the creator and the researcher are one, many of the insights and conceptualizations have already been presented throughout all the sections of this work. From the "know your technology" that opened section one, through to the "know your genre" of section two, and all the insights which directed the transition between "California Republic" and "Trans-H". It is impossible to separate the gaining of those insights from their part in the creative writing and re-writing itself. For example, when I understood the real importance of having the story world resembling ours and why – I used it in the writing and could also better explain the relations between estrangement, the coupling of science fiction with a "mating" genre, and the kinds of stories that can be told effectively in each time placement of the story.

After all this preface and warnings, it is time to lay down the insights that can be drawn from the writing of "California Republic", "Trans-H", and all the processes that happened between them.

1. Writing a science fiction story, especially but not only a TV series, demands creating a system of interrelated decisions about four factors:



   The Novum, or the technological/scientific twist that differentiates the world of the story from our known world (or from the history we know) is at the center of the system, "first among equals" from the components of creating a science fiction story. In practical terms – you do not have an idea for a science fiction story until you know, at least in rough lines, what the technology or scientific difference-maker you want to base your story on is. Once you decide it, or make changes to it, you will need to adjust the other components.

2. A major decision about the novum and the story world together, is how similar or different should they be from our known world. Is it a story that happens roughly in our time and world, and introduces a confined novum (like a drug or a medical procedure that do not really exist)? Or is it a story that takes place thousands of years in the future, showing inter-galactic battles and encounters between different species? This decision sets the width of the "estrangement space". Any science fiction story needs an "estrangement space", because science fiction deals with showing alternatives to the world and provoking the thought of how things could be different. However, making this "estrangement space" large or small creates a

completely different experience. Here is a rough, intuitive comparison between the consequences of having a highly differentiating novum and a moderately differentiating novum:

	A highly differentiating novum	A moderately differentiating novum
Commonly "mating" genres	Action-adventure, war	Drama, comedy, action-adventure, horror
Feel of the story	Action packed, tension building, "big time" entertainment, grandiose visuality, creates excitement from technology	Personal, political, philosophical, creation of strong empathy to characters
Thematic impact	Touches on classical and timeless themes (like loyalty, freedom, heroism); relates to current issues as a metaphor or an allegory, but not directly;	Reflects on processes and trends of our known world; makes a comment about the impact of technology on human existence;
Examples	"Star Wars", "Star Trek", "The Hunger Games", "Altered Carbon"	"The Handmaid's Tale", "Black Mirror", "Eternal Sunshine of the Spotless Mind", "Children of Man"

This table is not completely accurate or deterministic. It is certainly possible to tell a personal, touching, thought provoking story in a distant future setting, but the table reveals a general direction to the impact of this decision. A writer who choses one of the two strategies (or one which is in between – although this "between", I assume, tends to drift in its feel to one of the ends) should understand that he creates a field of dramatic possibilities, and that if he wants to break out of it and create a different experience, he should find a solution or technique for doing so. An interesting example for that is "Westworld" which is a "highly differentiating novum" story, but it takes place in a theme park designed as the wild west, which is a more recognized setting for the viewers.

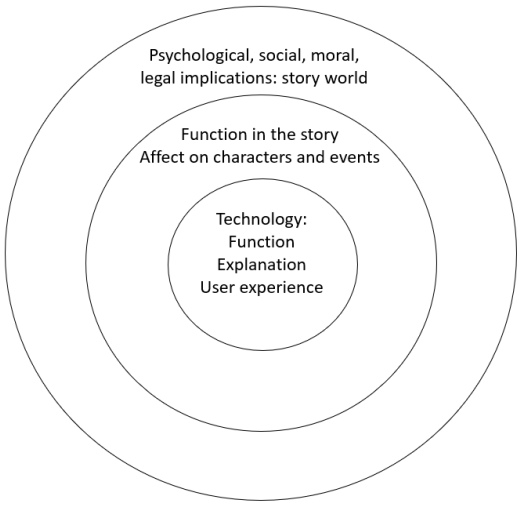
The "estrangement space" decision has two other implications for the work of the writer: (a) when he writes a story in a similar world to ours he can rely on his knowledge about the organization and establishment of the world, while a writer that writes in the far future has to come up with an enormous amount of variables and factors that make up this world. Some writers do it amazingly well, but there is

a greater risk or filling your science fictional world with clichés. (b) the more different you make your world and technology, the more challenging is the job of conveying it to the audience without hurting the flow of the story. With more differences and unknown technologies, political or social structures – the more (or more efficient) explaining the writer must do to help the audience be oriented to the story.

3. The science fiction writer should know his technology. "Knowing the technology" means knowing how it works, why it works, why it developed like this and not otherwise, who makes it, what the developmental stage of it is, how it can malfunction, what the "user experience" is, and maybe some other aspects. The purpose of this knowledge is to give a sense of reliability and authority to the reader, minimizing the huge risk of clichés, and to wisely use the attributes of the technology in the story, creating original and interesting scenes and character's considerations. For example, in "Altered Carbon" a murderer who knows the "back-up intervals" of their victims can use that knowledge to kill someone without them remembering who did it.

   Another layer of knowing the technology is understanding its possible psychological, social, and legal implications. This process is a bridge between the technology and the story world, and it is a major technique of designing the story world. It does not have to be deterministic – there could be several implications in several dimensions and the writer can decide to include all those he came up with or just a few. There should be some logic to including or excluding implications, but the main thing is using it to tell a good story that feels reliable and maybe uses the connections between a technology and its influence to enhance the drama and the action.

   The different layers I outlined about developing a strong understanding of technology as the foundation of writing a science fiction story can be described in the following diagram:



There could be many new technologies in a story. Should all of them get this "treatment"? It will not hurt (except for the writer's time it will consume), but not every special doorknob or futuristic beverage needs this detailed knowledge – the main technologies that play out in the story and affect its settings and course should get this treatment.

Most of what I wrote here applies to technologies as tools, but it can apply to twists of science (such as the fertility crisis of "The Handmaid's Tale" or "Children of Men") and to political/social/historical alternatives ("The Man in the High Castle", "The Hunger Games", "Altneuland").

4. It is very advisable to create the premise of the story as a derivative of the novum, or at least very close to it. The meaning of it is what Peter Russell said and I agree: make the technology create the problem of the story and have the protagonist try to reach a goal that would not exist without the novum. Luke Skywalker has to master the force and is called by his sister to join the resistance because the empire forces have developed a new awe-inspiring technology – the Death Star. No Death Star, no call, no "Star Wars". If women remained fertile, Gilead would not have taken over the USA and enslaved the fertile women, and June would not have lost her daughter and faced the challenge of surviving her enslavement and preserving her inner identity.
5. A useful way of fleshing out and refining the theme of the story is to brainstorm the possible conflicts, dilemmas, psychological adjustment challenges, moral and legal

questions of the novum, and the reality of the story. There is a reasonable chance that the theme "hides" in the outer layer of the implications of the technology. On top of that it is worthy to explore and come up with the potential benefits of the technology, the beauty that can be found in it, the "cool stuff", and the fun that can evolve out of it. Those will help to devise storylines, characters, and scenes. It can contribute to balancing the theme and present it as more of a debate than a single statement. As importantly – the theme is expressed not just by narrative, but through symbols and visuals as well, and this kind of brainstorming can elicit such visions.

This creative writing research journey has been a unique experience for me, making me face and understand my writing process, and more than that – the value of my writing, in a much deeper way than ever before. As a writer one of the biggest problems is asking yourself: "Is it any good? Is it worth something?". This question can be asked about everything in this work – from the screenplays to the insights laid out in this last chapter.

"Outing" my writing process and thoughts the way I have in this thesis is at the same time frightening and enabling growth as a writer. It might lead any reader of this dissertation to see me making huge mistakes, maybe questioning whether this person really does know what he is doing, but at the same time it pushed me to be as justified in my writing as I can and gave me insights not just about science fiction writing, but also about the way I can treat any writing from now on – with understanding of the genre, the dynamics between the parts of the story, and the meanings and limitations of creative decisions. I hope all of those could contribute to some other writers (science fiction or otherwise), writers-researchers, science fiction scholars, and people curious about human enhancement.

3.11 Extended conclusions and discussion

The previous chapter presented the main insights and conclusions of the research. Briefly, those conclusions are:

- The process of creating a science fiction story involves setting up a system of interrelated relations about four factors: the "novum" (the technological "difference maker"), the premise, the story world and the theme.

- When writing a science fiction story from a thematic/philosophical point of view, a major decision to make is how similar or different from our world should the story world be.
- A science fiction writer must know the technology he writes about. "Knowing" the technology means being able to know different aspects of it – from its functionality to moral, psychological and social implications of it.
- It is advisable to create a premise, which is directly derived from the "novum", meaning that the problem of the protagonist is a result of the "novum" in some way and can exist in its specific form only in a world in which the "novum" exists.
- A fruitful creative technique of developing a science fiction story is to brainstorm many possible moral, legal, psychological, romantic, social, economic, technical and other consequences, events, dilemmas and human challenges that can happen from the existence of the "novum".

These conclusions follow the framework described earlier of referring to the creative writing process from a cognitive perspective, exploring the concepts of understanding and framing the writing challenge as they emerge. Section 3 of the dissertation also follows the way these insights have evolved throughout the writing and how they were implemented in the transition from the first screenplay ("California Republic") to the last ("Trans-H").

This document will elaborate on the way these conclusions answer the research question and raise a possible contribution to the different disciplines this research relates to.

Answering the general research question

The basic research question was: what is the creative process involved in writing a science fiction TV series about a morally, psychologically, philosophically and socially charged technological subject? This question can contribute to the fields of creative writing, science fiction, science fiction writing and TV screenwriting.

In general, the previously mentioned conclusions provide an answer to this question: the creative process involved in such a creative challenge is based on creating a system that integrates the "novum" (the technology), the premise, the story world and the theme, by

paying conscious awareness, learning and exploration to each one of the components and constantly aligning them with each other so their interrelations are coherent and consistent with each other. This framework of the creative process is discussed in greater detail in the dissertation. Many of the practical implications of it are told throughout section 3. For example: The decision between having an enhanced protagonist (in "Trans-H") or an unenhanced protagonist (in "California Republic") completely changes the way the entire story system is developed. The unenhanced protagonist gives an outside perspective to enhancement, which is leaning towards the negative, and leads the viewer to adopt an "outsider" point of view to enhancement. This was part of the dissatisfaction from the first screenplay, which, among other things, didn't convey the rich thematic ideas concerning human enhancement.

It is important to note that the way the above-mentioned framework has been established was from accumulating the insights created from the problems, questions and challenges throughout the process (questions like "should the protagonist be enhanced or not?", "should I tell a story that happens at the very beginning of enhancement or when it is more developed?"). While trying to answer those questions and make the creative decision about them, realizing how one decision influences the other aspects of the story system, the overall understanding of the challenge has been established. It was not the other way around – meaning that it is not an existing framework that was applied to the writing. In fact, the way this framework is phrased might be perceived by science fiction writers and theorists as logical – but it does not appear in current literature in the way it is presented in this dissertation. In this sense the dissertation can offer a clear contribution to the practice of science fiction writing, and also to the research of the science fiction genre by providing a framework that can be used in studying stories of the genre (by examining the ways by which stories of this genre constructed the story system that interrelates "novum"/technology, story world, premise and theme).

Elaborating more on the conclusions can be done by relating to the sub- questions of the main research question.

Can a philosophical subject matter serve as an effective trigger to writing a screenplay? How can the study of the philosophy affect the writing process? How can a science fiction writer represent and dramatize philosophical ideas? How can philosophy be a source material to screenwriting?

All in all, the answer is: yes. This dissertation showed that while being guided by a philosophical subject matter a story and a screenplay can be developed.

A story is not an essay. Its goals are to attract and emotionally engage an audience, but also to convey a meaning in an experiential way. Perceiving a story this way is almost contrary to the form of a philosophical or intellectual debate, which is based on rational claims and justifications. However, philosophy and storytelling do share a very strong common ground: they both try to make sense of life, even on the very same dimensions (values and morality, living the right way etc.). This means that the practice of writing a story influenced by a philosophical debate has a potential.

However, the "translation" between a philosophical debate and a story is complicated and not direct. This can be learned from this research: in "California Republic" (the first screenplay) the story was based on too narrow a representation of the debate, conveying mainly that "enhancement is a threat", and this was part of making that screenplay unsatisfactory. When the attempt was to present the debate in greater complexity – it allowed for a more intriguing and impactful screenplay. The basics of this "translation' must be done by placing "people" (characters) in a situation that brings life into the debate – transforming the debate into a living world.

This conclusion can contribute to writers by offering them a practice of taking philosophical issues and elicit the hidden stories. It can also offer a tool for philosophers: the form of a story can be a continuation of the philosophical inquiry by trying to tell their ideas as a full-scale simulation in a story. It can also suggest a possible cooperation between philosophers and writers that can be beneficial to both sides.

How can the study of the technology affect the writing process? What kind of a study of the technology should be done for the purpose of writing a screenplay? How should a

science fiction writer treat and work on the representation of the technology in the screenplay? What dimensions of the technology should be explored and how? Which decisions and considerations should a science fiction writer exercise in relation to the technology?

The conclusions chapter of the dissertation offers a clear answer to this question. It claims that understanding the technology is a must for the science fiction writer. The meaning of "understanding the technology" is also explained – it involves understanding the functionality of the technology very well; maybe (although not always necessary) to understand, even in general terms, the guiding principles behind the technology; and as important – to have a good idea on how this technology changes people, life and society and what kinds of moral, legal, social and even psychological issues it may rise. This is a work in which the science fiction writer operates in similar ways to a philosopher. in similar ways to a philosopher.

It is advised to science fiction writers to learn the features of the technology (or scientific twist) they wish to write about, know to some extent the existing technologies in that field, and also read or brainstorm materials about the human aspect of the technology (all the dimensions mentioned here).

There are many decisions about the technology that a writer can make when designing his/her story: how advanced is the technology in the story? Is it a single "novum"/technology explored or is the entire story world is full of new technologies? What are the main challenges this technology will reveal – operational? Moral? Others? For example: when introducing a new weapon in a story the writer needs to decide how powerful it is (meaning the advantage that the one holding it has over his rivals)? What does it take to operate it? How can it be eliminated? What is its range (very important when writing a story – because the entire geography and layout of the scenes corresponds to this feature)? How can it malfunction (important if you want to enter the characters into trouble, or on the other hand save them)? How many of those exist? And so on.

The main contribution of this conclusion is as a practice to science fiction writers.

Should a writer make his own stand on the philosophical debate or should he/she represent the debate as it is?

This is a question that this research does not provide a definite answer to. Several things can be said about it:

- Evaluating the screenplay by the way it represents the debate, and trying to better represent its different sides, helped the screenplay to develop more nuances and drama.
- Me, as the writer, has changed my own view of human enhancement throughout the process – from a more clearly negative approach (thinking it is a danger to humanity) to a more complex view of the subject, understanding it has immense potential to help humanity and also dangers. Basically, at the end of the writing process, I hold the opinion that enhancement is both unavoidable and positive and can turn human life to the better, but that in order to achieve this positive impact governments and the general public must be involved in an ethical discussion. In some ways – if this series will be able to convey this complicated idea, then it is a success of the creative challenge. It does say that being a creative writer trying to write a story about a morally charged subject matter can grow (or change) the writer's own point of view (meaning that creative writing is learning).

This sub-question can be subjective and vary between writers. Taken from the experience gained from this research, it can be suggested that:

- When a writer has a strong thematic opinion and "message" that he/she holds and wants to convey it, the story will benefit from making the contrary (or different) claim as strong at some point of the story. This can be found by McKee's idea of "the negation of the negation" – that throughout the story a major value needs to be tested and challenged and that at some point the other side of the value needs to be presented in an appealing way.
- When the writer does not have a strong opinion, he needs to be able to develop (through the characters, the events and so on) a concise presentation for the conflicting values.

How well should a science fiction writer know the characteristics of the genre? How does the study and usage of genre conventions, concepts and theories contribute to the writing? Can the writing process help to evaluate, redefine or contribute to the theory in science fiction?

Answering this question can be arguable. Out of this creative writing challenge it can be said that the study of both science fiction theory had an overall positive impact on the writing. Writing a science fiction story without understanding how to "position" it in the genre, can lead to a messy story. However, this can be achieved either explicitly or implicitly (meaning that a writer with a strong intuition can "sense" the genre conventions without explicitly studying them).

The practice of watching and studying science fiction TV series had a greater positive impact on the work. It enabled to broaden the creative process by enriching it with possibilities, sometimes even by providing an example that showed that challenging goals can be achieved. In writing this specific screenplay there was a unique contribution to TV series such as "Akta Manniskor", "The Man in the High Castle" and to some extent "The Leftovers" and "Westworld" – which helped by showing ways of incorporating philosophical ideas into drama and telling a story in a complicated world.

A possible contribution of this work to writers can be by reinforcing the practice of studying other works of the genre.

A contribution to the study of science fiction as a genre can be made by this research in showing that the relatively abstract and theoretical concept of the "novum" can be used as a pillar for the creation of stories themselves. The way the "novum" is perceived for the sake of writing, and the way it forms relations with other creative writing concepts (premise, obstacles, story world etc.) can validate and deepen its usage in the genre.

California Republic

A Sci-Fi TV Series, by Eran Barak-Medina, June 2017

California Republic: Season one mini-bible

An FBI investigator tries to stop a group of fascist elite tech guys who develop human enhancement technologies and plan to create a meritocratic society. His daughter and x-husband are among the group.

Episode 1

AMOS BAER (55) was once a very talented FBI agent, but somewhere along the way, due to his lack of ambition and disgust of anything political, his progress stopped. In recent years, he's doing a marginal job, usually given to "has beens" - in charge of genetic laws violations.

When Amos is called to check out some guy's dead body, showing strange outcomes on DNA compatibility measures (only 99.97% human...), he understands that something much greater than the regular forbidden black market "baby designing" services or the dangerous height enhancement or penis enlargement genetic treatments is going on.

Amos discovers that the dead guy, ROB RAND, worked with his own daughter – VANESSA JACOBS-BAER (a brilliant Doctor of Physics at only 20), that they were friends. Vanessa & Rob worked at a secret project of a giant High-Tech company - SARASWATI (a.k.a. "SW"). Amos is sure that SS and its owner - billionaire WAYNE BANDURA (45) are behind the strange thing that caused Rob's death.

However, since there's no evidence of a crime, Amos is denied resources to help him investigate.

Wayne Bandura has a lot on his plate. His beloved wife, DANA (35) is dying from a terminal illness. He sponsors a world-class genetic expert, The Indian DR. INDIRA SAJEL (55), who tries to develop a self-regenerating genetic mechanism. Rob volunteered to be a subject in her

experiments, and under Wayne pressure to develop the treatment too in time for saving Dana's life, Dr. Sajel tried a non-complete treatment on him, which resulted in his death. Dr. Sajel estimates it will take at least another year before the treatment will be ready. Desperate, Wayne talks Dana into having her body cryonically frozen to be "melted" when the treatment is effective.

Amos' investigation leads him to Dr. Sajel. When he confronts her, she denies any relation with Rob, but something that she slips bothers Amos - She implies the Amos himself broke the genetic treatment laws. Amos realizes what she means and discovers the truth about his daughter - his x-husband, AARON JACOBS (60, A charismatic political sciences professor who advocates for meritocracy), "designed" Vanessa's DNA with the help of Dr. Sajel 20 years ago. This is the reason she is so perfect, extremely beautiful and smart.

Rob's body is taken from the police morgue to an unknown place, hindering Amos' investigation. He tries to follow the leads, assuming it's the doing of SW, but discovers that another big company - "WALKER BIOTECHNOLOGY" is behind it.

Wayne and Dana say their goodbyes and with the help of Dr. Sajel, Dana is being cryonically frozen.

Episodes 2-4

o Aaron leads a group of people, high-tech & biotech leaders and other members of the financial, intellectual elite. They are all fed up of having to abide by "regular" laws. They form a plan to claim California independent and run it by Meritocratic principles.

o After freezing Dana, Wayne joins the group (he knows that Dr. Sajel's work, which is illegal, could save his wife's life). A conflict is formed within the group - Kareem Walker, the owner of "Walker Biotechnology", blames Wayne for not sharing his secret research with the group. Walker suspects Wayne of developing something that would enable immortality.
There are other questions the group cannot decide upon, like who will be the leader of California and how it will be decided.

o Amos reaches a dead-end regarding the genetic treatment research, but he does find out what Vanessa is

working on - Project S is about merging the human mind with a computer, enhancing its ability to levels of more than 300IQ. He tries to open an investigation about it but is denied by his boss, saying it's not his domain, and anyway there's no crime in technological advancement... Amos tries to convince Vanessa to quit this job, saying it will result in huge damage to humanity. A rupture between Amos and Vanessa begins.

o Wayne is not pleased with the progress of "Project S". He replaces the director of the project with Vanessa. Vanessa manages to lead it to new achievements, creating a "super rat" - rats with high intelligence.

Episodes 5-8

o SW is under attack by a group of militants who think the SS' systems became too good and with too much control, that the dependency in their systems has become dangerous. The attack starts with small actions but increases to blowing up SS' facilities.

o Amos is part of the FBI team that tries to arrest the militant group but uses it to further investigate what's going on inside SS. He manages to contact the leader of the group, impressed by her. He wants her to talk with Vanessa and "recruit" her to the side that opposes the "technological control over humanity".

o The rivalry between Wayne and Kareem Walker over who will lead the future California grows. Kareem thinks that California should be completely detached from the rest of humanity. Wayne basically still believes California's mission is to better humanity. Since SW' systems are crucial in executing the plan to achieve independence, at the moment Wayne is "winning". However, Walker, who holds Rob's body, manages to threaten & extort Dr. Sajel to secretly serve as an informant of his.

o The militant group manages to penetrate the main building of SS. Vanessa and her staff are hiding in the defended Project s' labs, which the militant group tries to blow up. Amos understands the group used him and that Vanessa is in danger and leads the effort to battle off the group. They manage to rescue Vanessa and her team, and the group leader is killed.

o Vanessa's development reaches a point in which she can implant her IQ boosting chip in people. She decides to be her own subject, going over the procedure and waking up

with almost infinite cognitive abilities.

Episodes 9-12

- Vanessa, now with a superpower brain, starts showing signs of losing her mind. It looks like all the inner conflicts she had are amplified to a stage in which she's almost mentally paralyzed. She performs almost like a robot - doing the technical work but can't make moral decisions.

- The California conspiracy group realizes Amos knows too much. Kareem organizes a hit against Amos. Amos survives but is hurt. Aaron, who still loves Amos, is furious, joins Wayne in a front to stop Walker (Who managed to reveal the stage of Dr. Sajel's genetic treatment).

- Wayne redraws from the conspiracy, but Walker captures the frozen body of Dana and forces Wayne to cooperate. Kareem forces Vanessa to perform the implant of Kareem's son. Kareem thinks that Vanessa's madness comes from being "not strong enough" morally, that gaining these super abilities requires a determined mind, like his own and his son's. The procedure works, and Kareem's son is now the second person to possess superintelligence.

Walker puts in motion the plan to separate California from the US under the control of his son. The plan is to be performed with the use of SS' systems that will "unplug" California from the federal government and "re-instate" it as independent, and with the use of a small army of enhanced people that Kareem and his son design (Kareem's son's heightened intelligence enables him to improve Vanessa's technology to create people with enhanced abilities who will be loyal).

Aaron and Amos flee with Vanessa. They are on Kareem's target. Amos reaches the remains of the anti-SW militants for help. He then realizes the only way to fight the enhanced people is to become enhanced himself and asks Vanessa to perform the procedure on him.

California Republic: pilot screenplay

EXT. OUTSIDE SAN FRANCISCO CITY HALL - DAY

In front of San Francisco city hall stands a group of SOLDIERS. They look like an elite unit, extremely well equipped. They stand in rows.

In front of them their leader - a YOUNG BLACK MAN (25'ish, looks very confident).
Two of the soldiers pull down the STARS & STRIPES FLAG from the front of the building, and raise the "CALIFORNIA REPUBLIC" flag, with the brown bear drawn on it.

The YOUNG BLACK MAN seems pleased.

The shot goes back to a POV behind the rows of SOLDIERS, discovering a frightening view - all the SOLDIERS have an electronic chip attached to the back of their heads.

CLOSE UP on the FLAG turns into the titles of the show: "CALIFORNIA REPUBLIC".

*** titles ***

INT. A BIG WHITE ROOM - DAY

A beautiful big white room. Several people, all dressed in white, sit around a bed in meditation posture. They softly mumble some sort of a quiet chant.

On the white bed lays DANA (35-40). She looks terribly ill. Next to her, laying on his side, the only one in the room not wearing white, her husband WAYNE (45). WAYNE looks at DANA with love and worry.

EXT/INT. A STREET/STAIRWAY/APARTMENT - DAY

A non-driver car dashes very quickly through a San Francisco side street. The words "SS operated" are written on the car.

The second it stops the door opens up. AMOS BAER (55) steps out of the car, holding his finger on his ear.

There's a strong white-noise squishing sound, sort of KHHHHH. As he walks out the car automatically continues elsewhere.

VANESSA (O.S)
Dad. don't press the phone with your finger.

AMOS
Sorry. But how will it know that I'm talking?

VANESSA (O.S)
I can explain, but do you want to hear it?

AMOS nods to a policeman guarding an apartment building's entrance. He asks the policeman with a gesture "where?". The policeman signals "2".

AMOS starts climbing up the stairs. He takes his hand off his ear, intuitively takes it back and then off again. The white noise stops.

AMOS
No, no. How the hell did you know I was doing it?

VANESSA (O.S)
Cause when you rub a mic there's noise

AMOS walks into an open apartment on the second floor. The apartment is full of detectives and forensic people.

AMOS
You sure know how to make a guy feel stupid

VANESSA (O.S)
you're not stupid, dad, you just don't want to try.

AMOS
Here we go again.

A detective signals AMOS to follow him. They enter the bedroom. In there, lays a MALE BODY (around 30). He lays on his back, eyes open. AMOS notices his retina is grey. AMOS observes the situation.

VANESSA (O.S)
The world is changing. You have to stay ahead of it, or you'll be left behind.

AMOS starts examining parts of the dead guy's body. He asks with his hands for the help of the detective - who gives a hand.

AMOS
I'll leave this for tech people like you.

VANESSA (O.S)
It's not an option anymore. This thinking, that's exactly why you're not FBI director but... what's your title now?

AMOS
In charge of genetic treatment code violations.

AMOS discovers areas of the dead guy's skin with strange colors.

AMOS pulls out an electronic needle connected to a computer. He sticks the needle into the body and watches the screen.

VANESSA (O.S)
Exactly.

AMOS
Vanessa, I'm counting on you to carry me to the new era.

VANESSA sighs.

VANESSA (O.S)
Fine.

AMOS is surprised by the results on the screen. He shows it to the detective who shares the response.

AMOS
I love you.

VANESSA (O.S)
Love you.

AMOS reaches his hand to his ear to disconnect, realizing halfway that it's unnecessary.

INT. MIA CHANG'S OFFICE - DAY

AMOS walks to an office at the FBI headquarters. He sees there's a meeting going on inside. He looks at the woman who runs the meeting - MIA CHANG (40). AMOS raises his hand to signal her. she ignores it.

Time pass - The meeting is over and everyone's leaving Mia's office. AMOS walks in.

MIA
You really didn't have to come here in person.

AMOS
I always like to see what you've become. Makes me proud.

MIA smiles.

MIA
And I guess you have a request I'm going to deny, so you assumed that coming in person will arise some sort of... what exactly?

AMOS
Nostalgic awe.

MIA laughs.

MIA
OK. Shoot.

AMOS
There's a dead guy with some sort of unrecognizable biological transformations. It's beyond the system's knowledge. I'm gonna need a level A research team for that.

MIA
Was he murdered?

AMOS
Hmmm... can't say for sure. Probably not.

MIA
So, what's the crime?

AMOS
Genetic manipulations.

MIA
Of the forbidden kind?

AMOS
Of the unknown kind.

MIA
I'm sorry Amos, it's not enough.

AMOS
Come on, Mia. How can I do my job like that?

MIA
Amos, I can't authorize this kind of resources without proof of a crime. You have all the standard tests at your disposal.

AMOS
Well, that's nice, except that my job is to oversee the non-standard, kill the new buds of illegal genetics.

MIA
Which you don't know is the case here. And anyway, that's not your job. You're supposed to see that no one performs illegal genetic manipulation that we know of, the decide-if-you're- baby-will-have-a-penis-or-vagina stuff. Not to meddle in the world's scientific progress.

AMOS
That's the boring shit, Mia. Any police sergeant knows how to deal with it.

MIA
That's the job you have.

AMOS is frustrated, begins a "bang the table" move but stops halfway.

AMOS
Probably you're right. I shouldn't have come in person. I should've sent an online request so you could online deny it.

MIA
Something to learn every day.

AMOS walks out.

INT. A LABORATORY - DAY

WAYNE enters the laboratory. It feels like a futuristic laboratory/clinic, with imaging machinery and other staff.

DR. INDIRA SAJEL (in her 50's, Indian) is sitting in her office going over some calculations. She's alone at the lab. WAYNE approaches her. When she sees him she stands up. WAYNE signals her to sit and sits in front of her.

WAYNE
I heard Rob Rand is dead.

DR. SAJEL
Yes.

WAYNE
I'm sorry.

DR. SAJEL
He knew the risks.

WAYNE
Yah... (pause) so I gather it was too early.

DR. SAJEL
It was clear to me.

WAYNE
Yes. I remember. Noticed.

DR. SAJEL
What do you want to do?

WAYNE
When do you think the treatment will be stable enough?

DR. SAJEL
If all goes well, in a year.

WAYNE nods for understanding. His eyes become moist, and he pulls his nose.

WAYNE
You know. I think that we're almost there. That the time and technology and human development are almost there. Someone will get there, soon, so why can't it be me?

Why can't it be her? No one, no one is more suitable than me to achieve it.

DR. SAJEL
Mr. Bandura, you knew...

WAYNE signals her to stop.

WAYNE
I will continue to support your work. One question: Will it work with defrosted tissues?

INT. AARON'S CLASS - DAY

AARON JACOBS (60) is sitting on the edge of his lecturer's table, in front of a huge hall full of students - some of them are physically present, many others are virtually present - their faces are seen on many screens hanging on the class hall's walls.

AARON, a smiley, roundish man, sprinkling with charisma, is quiet. He notices how all the students are hanging on the edge of their seats to hear what he's about to say next. He enjoys it.

AARON
That's the only hope for the human race to survive, to save itself from drowning in irrational self-distraction, to save itself from a competing intelligence that will come, and it will come. To continue to flourish and to reach even newer heights, a next to perfect world.
Meritocracy. (pause) Class dismissed.

A huge wave of applause runs through the hall. AARON acts casual about it, packs his notebook, getting ready to walk away.

When AARON is ready to walk away, he notices AMOS at the door. AARON stops and smiles at AMOS. AMOS approaches him. The two look at each other.

AARON
Amos.

AMOS
Aaron.

They hug long and hard. When they part AARON still warmly holds AMOS' hands.

AARON
How have you been?

AMOS
The same, you know.

AARON
Yes, I know.

AMOS
What about you? Same punches?

AARON
As long as something won't change my mind.

AMOS
I couldn't.

AARON
So no one will.

AMOS
Are you still with that guy?

AARON
Thomas? Yes.

AMOS smiles.

AMOS
Vanessa busted my balls again.

AARON
She's right, you know.

AMOS
Well, I'm not a super-genius like the two of you.

AARON
Don't you think that nearly halfway through your life it's time to stop selling yourself short?

AMOS
I'm not planning to stick around till 120.

AARON
Shame. We'll miss you. Yet, I guess you didn't come just because you miss me.

AMOS
Yap. I need to use your dean title.

AARON
Sure. Whatever you need.

INT. UNIVERSITY LAB - DAY

AMOS waits while a young RESEARCHER puts the DNA sample from the dead guy in some sort of a scientific analysis device.

The RESEARCHER checks for results.

RESEARCHER
It's something new.

AMOS
I don't need you to know that.
I need to know what it is.

RESEARCHER
It will take a long time, and even then, I can't be sure we will be able to figure it out. It's out of our current league.

AMOS
You're Berkeley's genetics research center. Is anything out of your league?

RESEARCHER
There are 2, maybe 3 people who can intervene with genes this deep. I heard that one of them is currently working for SW here in San Francisco.

AMOS
Who's that?

RESEARCHER
Doctor Indira Sajel.

AMOS's earphone beep. AMOS looks around for a second to understand where the beep is coming from.

RESEARCHER
That's your earphone, I guess.

AMOS
Right. dammit. Excuse me.

AMOS walks a bit away from the researcher.

AMOS
Yes?

DETECTIVE (O.S)
Hello agent Baer. It's detective Lawson.

AMOS
Yes, detective. Can you prove murder by now?

DETECTIVE LAWSON (O.S)
No... not yet, but I do have Rob Rand's calls and there's something there I think you should see.

AMOS
What's that?

DETECTIVE LAWSON (O.S)
I'm transferring it to you as we speak.

AMOS looks at his sleeve for the wearable screen, where a list of names, dates and hours is shown. The name "VANESSA JACOBS-BAER" comes up several times.

INT. SW' BUILDING ENTRANCE - DAY

Title: "Two months earlier".
VANESSA JACOBS-BAER (20 YO, amazing looking, exotic) stands in front of the automatic recognition passage. She hesitates, then passes through.

On the inside, she receives a message on her phone with a map showing her where to go.

INT. A CORRIDOR - DAY

VANESSA follows the map. A door opens up for her as she walks towards it.

In the corridor behind the door, there are a few people. DR. SAJEL is one of them, talking to ROB RAND (late 20's, the dead guy from scene 2). As VANESSA walks by her DR. SAJEL suddenly sees her, not giving it a thought for a second but then raises her head again and gazes at VANESSA.

VANESSA smiles, embarrassed, to DR. SAJEL and continues walking. DR. SAJEL follows her with her eyes, which makes VANESSA feel uncomfortable.

INT. PROJECT S' DEVELOPMENT CENTER - DAY

VANESSA enters an area that looks like some sort of a futuristic development place. There are some people working on different and interesting things - people have their heads scanned and their brain image shows on screens, a transparent cubical in which an electronic model of networks that somewhat resembles a brain.

VANESSA looks around with curiosity, walks a bit to check the cubical with great interest.

MAN (O.S)
Who are you? What are you doing here?

VANESSA turns, slightly alarmed. She sees DR. ELISHA GREY (in his 50's, a serious man with a bionic hand).

VANESSA
Oh.. Dr. Grey, honored to meet you... Ahh... I'm supposed to work here.

VANESSA holds her hand towards DR. GREY, who ignores it.

DR. GREY
I only know about a Dr. Jacobs-Baer that's supposed to come here today. Not that anyone asked me if I needed a new physics guy.

VANESSA takes her unused hand back.

VANESSA
I'm him... I mean I'm the physics guy, Dr. Jacobs-Baer.

DR. GREY doubtfully scans VANESSA.

DR. GREY
What will happen if we'll inhibit the neural link between the fourth granular layer and the mirror neurons?

VANESSA
We'll get a completely functional human being without self-awareness.

ROB (O.S)
Bingo.

VANESSA turns and sees ROB RAND right behind her.

ROB
And either way, even if she would think neurons are an over the counter pain killers, I would still hire her.

DR. GREY is also impressed with VANESSA's response. He nods.

DR. GREY
Welcome, Dr. Jacobs-Baer.

VANESSA
Vanessa...

But DR. GREY is already on his way...

ROB
I'm Rob. Give me your phone.

VANESSA hands her PHONE to ROB. ROB throws it on the floor and crushes it, something he seems to enjoy a lot. VANESSA looks at him surprised.

ROB
SW employees get the new earphones.

INT. VANESSA'S AND AARON'S HOME - NIGHT

VANESSA and ROB sit in the living room sofa, drinking wine.

VANESSA
I'm actually not in the legal age for this?

ROB
I'll pretend you didn't say that.
VANESSA laughs.

ROB
Your usual high intelligence self wouldn't laugh off a crappy joke like that, so here's to alcohol.

VANESSA
To alcohol.

They clack glasses and drink some more. ROB gestures towards a picture of AARON.

ROB
I took his class at Berkeley.

VANESSA
Don't tell me. (Switching to a pseudo- serious voice) It changed the way you look at the world.

ROB
Actually, it did. I understood that taking risks is the only way to go. No point in things otherwise.

The two sit quietly for a second. ROB leans over to kiss VANESSA. VANESSA hedges.

VANESSA
I don't know yet. OK?

ROB nods and smiles.

INT. PROJECT S' DEVELOPMENT CENTER - DAY

DR. GREY, VANESSA and some others of the lab's workers stand around a small maze with two RATS which have a chip implanted in their skulls. It is a mission in which the rats need to press two separate buttons simultaneously to get food which is behind a glass door - on a different part of the maze.

The rats go around and around. One of them presses one of the buttons, and the other one runs past by the second button, lingers around it for a second, and continues.

DR. GREY
Day 16. No behavioral change. No signs of new learning or connectivity.

DR. GREY walks back to his office.

VANESSA thinks about it for a second and then follows him, entering his office.

DR. GREY really looks like he's not in the mood.

VANESSA
Dr. Grey.

DR. GREY
Yes.

VANESSA
I think we're making the wrong assumption here.

DR. GREY
Do enlighten me Dr. Jacobs-Baer.

VANESSA
We're focusing all our efforts on creating the neural passage between them, but we don't know if their brains manage to interpret the signals.

DR. GREY raises his bionic hand.

DR. GREY
Do you see this? Do you know how it's called?

VANESSA
The Grey hand.

DR. GREY
Right. And it responds to the brain signals of men and women all over the world. No translation is necessary.

VANESSA
But we're now dealing with much more complex meanings that their minds need to process.

DR. GREY
Those are rat minds. But even if what you're saying is true, what will they do with all the extra signals they've been getting? They would go crazy, stop functioning at all.

VANESSA
Maybe they suppress it.

DR. GREY laughs in a way that clearly shows no genuine amusement.

DR. GREY
The physics guy now claims to be an expert on the subconscious of rats. Please go.

VANESSA thinks for a second.

DR. GREY
I said go.

VANESSA walks out of his office, goes back to her own. She sits and calls with her earphone. She gets a voice mailbox.

VANESSA
Rob. Where are you? You're missing four days now and no word. Without your balance, Elisha loses his own. (pause) Me too... I'm worried. I'll come over to your place after work.

INT. ROB'S APARTMENT - NIGHT

VANESSA walks up Rob's building stairs and reaches his apartment. She is surprised to see the door is slightly open, and slowly widens it and enters.

VANESSA
Rob?

When she walks in, she sees AMOS sitting in the living room.

VANESSA
Dad? What's going on?

INT. COFFEE SHOP - NIGHT

AMOS and VANESSA sit. VANESSA's eyes are red from crying. AMOS holds her hand, looking at her wishing he could make her feel better.

VANESSA calms down a bit.

AMOS
Were you dating?

VANESSA shakes her head - no.

VANESSA
How did he die?

AMOS
I can't be sure.

VANESSA
Was he murdered?

AMOS
Probably not.

VANESSA
So how come?

VANESSA looks at AMOS and realizes.

VANESSA
He had some sort of illegal genetic manipulation. Which one?

AMOS
I don't know yet. It's nothing that I've seen before. That's why I need your help.

VANESSA
What can I do?

AMOS
You weren't surprised to hear that Rob had a treatment like that.

VANESSA
No. He wanted to make himself better. He would do that.

AMOS
What are you doing at SW? What did he do?

VANESSA
Dad. You know I'm not allowed to say.

AMOS
Does Aaron know?

VANESSA
I don't know. If he does it's not from me. Can't you get this stuff from the company?

AMOS
You see, it's not officially a crime yet. That's why your secrecy is not helpful.

VANESSA thinks about it. She looks torn. AMOS notices it, sighs.

AMOS
Sorry love. It wasn't fair of me to put you in such a position. You shouldn't tell me.

VANESSA
If I thought it had to do with it... He was just like that, stupid. Stupid.

VANESSA cries for two seconds, then calms down a bit.

AMOS
Should I be worried about you?

VANESSA
I don't know what Rob did. I don't think it's related to our work.

EXT. OUTSIDE THE COFFEE SHOP - NIGHT

AMOS and VANESSA hug outside the coffee shop. It's a long fatherly hug, and VANESSA is very comfortable in her father's protective hands.

AMOS
Shall I take you home?

VANESSA shakes her head - no.

AMOS
Will you be all right?

VANESSA now shakes for yes.

AMOS
Why did you grow up so fast?

VANESSA
I'm not sure that I did.

AMOS
I'm afraid you did. (pause)
Be safe.

VANESSA
Yes, dad.

AMOS caresses VANESSA's hair. She suddenly remembers something.

VANESSA
There's one thing Rob said...
He said we are a generation
that will choose when to die. I
thought he was hypothetical or
joking, you could never be sure
with Rob. But now I think he
was serious.

INT. WAYNE AND DANA'S BEDROOM - NIGHT

WAYNE sits at the side of the room, watching a NURSE plugging DANA with different tubes. Between the procedure and the disease, DANA is painful.

WAYNE looks like he's about to roar. The NURSE seems to be done.

WAYNE
Thank you. Leave us alone, please.

The NURSE walks out. WAYNE comes over to lay next to DANA. Sadness takes over her.

WAYNE
Sorry

DANA
What for?

WAYNE
I can't hug you.

WAYNE looks at the other side for a second, sort of an instinct to avoid being seen crying. However, when he turns his face back to DANA it shows.

DANA
Wayne, I don't think we're winning.

WAYNE
Don't say that.

DANA
I know. Mind over matter. But I can't imagine myself healthy anymore.

WAYNE
Imagine yourself alive. I will take care of the rest.

DANA laughs a bit, but the laughter turns to more pain.

WAYNE
What's funny?

DANA
I just remembered the old monk's mud peels. They were disgusting. But I would take them again.

WAYNE
There's still one thing to do.

DANA struggles and manages to turn her head towards WAYNE.

WAYNE
I sponsor a research... it will be a revolution. It could be ready in a year.

DANA
A year? Honey Look at me.

WAYNE
We can freeze you.

DANA looks at him in shock. Is he joking at a time like this? No, he's dead serious and he believes in it.

DANA turns her head again from WAYNE, looking out the window (the bed has been placed next to a big window with a wonderful view of San Francisco).

DANA is silent, which irritates WAYNE.

WAYNE
Say something.

DANA
It's like putting a sick dog to sleep.

WAYNE gets up, walks a bit around the room.

WAYNE
And doing nothing is better? Cryonics has advanced in huge steps. It's simply delaying life for some time. This will give us the time we need to develop the cure for you, and for many others.

DANA
Wayne, it frightens me.

WAYNE
(Gets heated up)
And dying doesn't? It's a simple calculation. If we won't do that...

DANA
(Whispers)
Wayne...

WAYNE
...you will die for sure. With this, you will only skip a year and we'll defrost you...

DANA
Please.

DANA looks more tired than before. WAYNE looks at her, wishes to continue the conversation but realizing that DANA is not up to it.

INT. VANESSA'S AND AARON'S HOME - NIGHT

VANESSA walks in. AARON sits in the living room, reading. He can see she's not herself.

AARON
What's wrong Vanessa?

VANESSA
It's Rob. He's dead.

VANESSA cries again. AARON gets up to her, hugs her.

AARON
He was one of the good.

INT. AN OFFICE AT THE SS' BUILDING - DAY

AMOS sits in a chair at an office. On the wall runs a short animation that shows the writing "SARASWATI" with the drawing of an Indian goddess. The animation ends with the SS logo, and then starts again.

AMOS is sitting in front of a WOMAN - that's her office.

WOMAN
I don't understand why you came here. All of Saraswati's salaries and payments are open on your web. We're a 100 percent transparent company.

AMOS
I think the person I'm looking probably works for you without being on the disclosed list.

WOMAN
What's his name?

AMOS
Her name. Dr. Indira Sajel. She's Indian, like Saraswathi.

The WOMAN looks her up on the computer.

WOMAN
We don't have her.

AMOS
As I said, she might not be enlisted formally.

WOMAN
There's no such thing.

AMOS sighs.

EXT. OUTSIDE SS' BUILDING - DAY

AMOS tries to make a call with his earphone. He fails, picks up his regular phone and calls DETECTIVE LAWSON.

DETECTIVE LAWSON (O.S)
Yes, pal.

AMOS
Wanted to know if you have something new about rob Rand.

DETECTIVE LAWSON (O.S)
Not my business anymore.

AMOS
What?

DETECTIVE LAWSON (O.S)
Off the case pal.

AMOS
Who's on it?

DETECTIVE LAWSON (O.S)
Nobody. There's no case.

AMOS
Why? The autopsy explained everything?

DETECTIVE LAWSON (O.S)
No autopsy. The body has been taken.

AMOS
Taken where?

DETECTIVE LAWSON (O.S)
Beats me. It was just gone. With proper documents. Destination classified.

AMOS
Who gave the order?

DETECTIVE LAWSON (O.S)
Classified. But for sure someone with leverage to pull it like this.

AMOS
This is a strange case.

DETECTIVE LAWSON (O.S)
Pal. There is no case.

INT. MIA CHANG'S OFFICE - DAY

AMOS is standing in front of the sitting MIA (his boss).

AMOS
A dead guy with DNA which is diagnosed as only 99.97 percent human, disappearing corp and a world leading expert in genetics that's supposed to be in town but can't be found. Isn't that enough for you to understand that something is going on?

MIA
If I follow you correctly, there's no body anymore to explore. If you'll find the body, I'll authorize the kind of expensive autopsy you need.

AMOS
Very convenient for you. No. I want access to Wayne Bandura's personal money transactions.

MIA laughs with irony.

MIA
Between raising an initial suspicion and what you ask there's a huge, not huge, enormous gap.

AMOS sighs.

AMOS
Mia. You've turned into a cliché.

MIA
I've turned into a regional director. I see considerations you don't even begin to imagine.

AMOS
Like permitting crime?

MIA
That's the point, Amos. There's still not a proven crime here, and even if there was, trust me that some dude taking an experimental penis enlargement shit wouldn't rank high enough on the list for penetrating Mr. Bandura's, who you didn't establish any substantial connection to this thing, personal money.

AMOS
Do you understand what such a deep DNA manipulation can lead to? It's more than your long dicks, Mia.

MIA
That's why I'm allowing you to keep on investigating this, considering you probably have nothing better on your plate.

MIA pulls out a dossier and throws it on the table.

MIA
But here's something for you. I've run Indira Sajel on the Interpol web. Hard copy only for you. Maybe something there will help you find her.

INT. INDIAN RESTAURANT – NIGHT

DR. SAJEL is eating at a small restaurant. Suddenly AMOS sits in front of her. She's surprised at first, but after a second it looks like she was expecting this.

AMOS
Dr. Sajel, you're not an easy woman to find. Thankfully you can't go on too long without a good Punjabi meal.

DR. SAJEL
Ok, but tell me with whom do I have the honor?

AMOS takes out his badge.

AMOS
Amos Baer, FBI. Can't imagine it's such a surprise for you.

DR. SAJEL smiles.

DR. SAJEL
I heard your name, yes.

AMOS
May I ask what are you doing in San Francisco?

DR. SAJEL
Is there something that compels me to answer?

AMOS
I don't have a warrant, if that's what you mean.

DR. SAJEL
Yes. That is what I meant.

AMOS
I thought you will be kind enough to help me figure out some things.

DR. SAJEL
You can ask, and I will see what I can answer.

AMOS
All right. Do you know a young man called Rob Rand.

For a second DR. SAJEL's face show a glimpse of sadness, which doesn't slip by AMOS.

DR. SAJEL
No.

AMOS
You're sure? Nice guy, handsome, cheerful fellow, dead?

DR. SAJEL
I'm sorry detective Baer. I know your role at the FBI. I thought you wanted to consult on professional matters.

AMOS
I do. According to your expertise, what kind of treatment might result in the retina turning grey, skin color changes, and would result in a DNA which is slightly non-human?

DR. SAJEL
What are the specific molecules that are non-human?

AMOS
They seem to vary between cells.

DR. SAJEL is slightly surprised by this answer, but then her face returns to the usual.

DR. SAJEL
You mean you don't know.

AMOS raises his eyebrows - admitting he doesn't know.

DR. SAJEL
Your description is not enough to give a specific answer. I assume you mention it regarding that dead person you talked about, and assuming also that this person had no alternative reason to stop functioning, my guess would be that it might be some sort of a new regeneration gene therapy.

AMOS
I thought you deal mainly with customizing babies.

DR. SAJEL
I don't do that anymore.

AMOS
So, you admit this is your doing?

DR. SAJEL
I didn't say that. But what you told me interests me professionally. I hope that if you have other findings, you'll share them with me.

AMOS
Who do you work for at the moment?

DR. SAJEL
Ever since I left the university, I don't work for anyone else.

AMOS looks at her for a second, then stands up, ready to leave.

AMOS
All genetic treatment and research are allowed only to the extent that they will aid in curing disease and suffer for the entire of humanity but will not create an unfair advantage to a person or to an entity over its fellow man.

DR. SAJEL
I'm familiar with this stupid law, detective Baer. It is made by frightened people. Thankfully there are some who are brave and visionary to support groundbreaking work.

AMOS
Like Wayne Bandura?

DR. SAJEL
Like you.

AMOS
What do you mean?

DR. SAJEL suddenly looks very uncomfortable.

DR. SAJEL
(Stutters)
I... I'm sorry... Perhaps you should talk with your husband...

AMOS
My husband? Aaron? What does he have to do with it?

DR. SAJEL
I'm sorry... I have to go...

DR. SAJEL gets up, says something in Hindu to the restaurant owner who nods back, and goes. AMOS lets her go.

INT. A BEDROOM - NIGHT

Title: "SAN FRANCISCO, 2008".

Young AARON and AMOS (in their 30's) burst through the bedroom door while hugging, kissing and taking off each other's clothes. They fall on the bed.

AMOS
Are you on the peel Aaron honey?

AARON laughs.

CUT TO -

AARON
No. Make me a child, Amos.

The two are lying in bed, naked. AMOS almost asleep, AARON with his MacBook.

AARON
I wasn't kidding, you know.

AMOS
From the three hundred bad jokes you've Made today, to which one do you refer?

AARON
About having a baby.

AMOS
I Know

AARON
So.

AMOS
So.

AARON
So, let's fucking do it.

AMOS
I know biology isn't your thing, but you should know that for people like us fucking is not the way to go about it.

AARON starts hitting AMOS with his LAPTOP. AMOS tries to evade.

After fooling around a bit -

AMOS
Which one of us will be the father?

AARON
Let's mix our juices, let chance decide. Fifty-fifty?

AMOS
Fifty-fifty.

INT. AARON'S AND AMOS' HOUSE - NIGHT

Young AARON is on his computer. This is the same house where AARON and VANESSA live in the "present".

AMOS picks behind AARON's back at the screen.

AMOS
What? You're converting on me?

AARON
Yah. And I do it with you in the room, so you'll notice my cry for attention.

AMOS
Looks like a dating website.

AARON
It is. For female DNA donors.

AMOS is irritated by it.

AMOS
Didn't we agree about Louise?

AARON
Don't get me wrong. I love Louise, but she's too short and she can't even read her paycheck.

AMOS
You're kidding me.

AARON
No. she really can't.

AMOS
Don't go that way, Aaron.

AARON
What? Don't you want our child to have all the advantages it can? Look at this one.

AMOS hates that, but he knows AARON won't stop, so he sits next to him.

AARON
She's 5"9, gee that's taller than me, and she plays the contrabassoon.

AMOS
Whatever.

INT. AARON'S AND AMOS' BEDROOM - NIGHT

Young AARON pulls out two TEST TUBES from a small cooling storage box and shows AMOS with a smile.

AARON
Baby time.

CUT TO -

AARON and AMOS lay on the bed, naked. They stretch their hands across to jerk off each other.

INT. A CLINIC IN INDIA - DAY

Young AARON and AMOS sit nervously at the lounge. A WOMAN dressed in a nurse outfit comes into the lounge.

THE NURSE
Mr. Jacobs?

AARON and AMOS stand up immediately.

CUT TO -

They are in a room full of babies. AMOS is overwhelmed. The NURSE leads them between the babies until they stop near the cradle of a beautiful, perfect looking, calm baby.

THE NURSE
There she is. Your daughter.

The baby's eyes seem aware beyond her age of three days.

AARON
Can we hold her?

While he asks, AMOS reaches his hands and picks BABY VANESSA up. THE NURSE makes a "there you go" gesture to AARON and smiles.

AMOS holds BABY VANESSA with tender and confidence. He's in love. AARON watches from aside, sands his hand to caress the baby.

THE NURSE picks up some documents and hands them over to AARON who starts going over them with interest.

AARON
Do you want to know which one of us is the father?

AMOS
No.

INT. VANESSA'S AND AARON'S HOME - NIGHT

AARON and VANESSA sit in the living room, each of them with his/her work.

The doorbell rings. VANESSA gets up and opens. It's AMOS.

VANESSA
Dad?

AMOS seems troubled. AARON is surprised to see AMOS at their place.

AARON
Twice in a week? That's got to be important.

AMOS
Hi love. I need to talk with Aaron.

AARON
Let's go up.

INT. AARON'S AND AMOS' BEDROOM - NIGHT

AMOS looks at the bed a bit longer than you would usually examine a bed... AARON walks in and closes the door.

AARON
What is it Amos?

AMOS
You know, I always knew she got her DNA from you. I mean, there's no way her IQ came from me. I didn't care. I was even glad that it turned out like that, that she got your fifty. But it wasn't a chance after all, right?

AARON
Why on heaven's name do you bring this up now?

AMOS
I don't think heaven is involved. Unless God is an Indian woman who's an expert in genetics.

AARON
Yes.

AMOS
So, you're her father?

AARON
Yes.

AMOS
But you're not the only one.

AARON
Yes.

AMOS
That first trip of yours to India, to take care of things. You concocted her.

AARON
Yes.

AMOS
Some of me?

AARON
No.

AMOS sighs.

AMOS
Do you know who her mothers are?

AARON
Some of them.

AMOS takes a deep breath, can't look AARON in the eyes anymore.

AARON tries to put his hand over AMOS' shoulder, but AMOS drives it away.

AARON
Amos, I...

AMOS signals him to shut up and leaves the room. INT.

VANESSA'S AND AARON'S HOME - NIGHT

AMOS walks down the stairs. VANESSA comes towards him.

VANESSA
Dad. Is everything all right?

AMOS
Yes, love.

But his body language doesn't support the answer.
He's slightly distanced from VANESSA.

VANESSA
You weren't here for seven
years. If you showed up, then
it's important. Please tell me.

AMOS forces himself to caress her and smile at her.

AMOS
Don't worry.

AMOS walks out.

INT. PROJECT S' DEVELOPMENT CENTER - DAY

VANESSA enters the center. She sees the other workers standing together, some of them are crying. They know.

VANESSA approaches them. DR. GREY is standing in front of the group. A FEMALE WORKER puts her arms around VANESSA.

FEMALE WORKER
It's Rob, He's dead.

VANESSA hugs her back.

DR. GREY
He was a very good
Neurotechnologist. He will be
hard to replace. (Pause) Yes.
I'm sorry.

DR. GREY walks away from the gathering. He walks nervously. Despite the cold speech, it's evident that the news deeply upsets him.

VANESSA follows DR. GREY with her eyes. INT. DR. GREY'S

OFFICE - DAY

VANESSA enters DR. GREY's office. He seems very busy doing nothing.

VANESSA
Dr. Grey

DR. GREY

Dr. Jacobs-Baer, I'm not sure this is the best time to second guess me again.

VANESSA
No... It's something else... I... Do. Do you think Rob acted strangely in the last few days?

DR. GREY
What do you mean?

VANESSA
I'm not sure exactly.

DR. GREY shrugs.

VANESSA
Was he involved with anything else at Saraswati?

DR. GREY
What do you want Dr. Jacobs-Baer?

VANESSA
It's just... I saw him once talking with this woman...

DR. GREY
That wasn't unusual for Rob, you know.

VANESSA
Yes... But I don't mean like that, she seemed like a researcher of some sort, an Indian woman?

DR. GREY
Again...

DR. GREY raises his hands in an "I don't know how to help you" gesture.

VANESSA sort of lingers at DR. GREY's office. He looks at her.

VANESSA
Did you ever think about what will happen if our work here succeeds?

DR. GREY
Yes. We'll be able to make people's minds to work better.

VANESSA
Sure. But why is it so secret? Shouldn't it be something to be shared between research centers?

DR. GREY
We're working for a private company.

VANESSA
So, it seems right for you that when our technology will be ripe it will be in the control of private hands?

DR. GREY
I don't bother with that. If such things wouldn't interest the likes of Mr. Bandura, we wouldn't have all this. And I strongly suggest, for your sake, that you keep your mind on your job.

INT. POLICE MORGUE - DAY

AMOS walks into a control room where A MORTICIAN (in his 30's) sits in front of screens and windows that overlooks a big room in which bodies are on different tables and automatic devices are hanging over them, working. The way an autopsy is done is with no hands involved - only machines.
It's much like a factory. The MORTICIAN oversees it from the control room.

THE MORTICIAN
Yes?

AMOS
I'm agent Baer...

THE MORTICIAN
If you crossed all the doors, then you're authorized enough.

AMOS
You had the body of one Rob Rand here.

THE MORTICIAN
All of San Francisco's unaccounted bodies go through here.

AMOS
Young man. Gray retina. I need to know who approved to release the body and who took it.

THE MORTICIAN checks a computer.

THE MORTICIAN
Rob... Rand... family consent, taken by... it says confidential.

AMOS
What do you mean by family consent? The guy didn't have parents or brothers.

THE MORTICIAN
I know what he knows (points to the computer).

INT. AARON'S UNIVERSITY OFFICE - DAY

AARON's office is a bit old-fashioned. Tons of books, heavy furniture.

AARON is sitting with A MALE STUDENT, who looks at AARON with admiration. AARON is standing watching the window, with his back to the student.

AARON
Do you think you are the best version of yourself?

STUDENT
Hmmm... No?

AARON turns to him, smiling his charismatic smile.

AARON
True. You are nowhere near it. You know, in the Jewish Hasidic belief, there's a saying - Every man should know that within him there is a candle, and no man's candle is the same as his fellow man. One should work and make his candlelight discovered by the many.

AARON approaches the STUDENT, maybe even too close to him, leans against the STUDENT's chair.

AARON
So, Sebastian, are you ready to show your candle?

SEBASTIAN
Yes.

The door opens - VANESSA enters. SEBASTIAN flinches, while AARON just stands up and smiles.

AARON
Vanessa, dear, what a great surprise.

VANESSA doesn't look happy.

VANESSA
I need to talk to you.

AARON signals SEBASTIAN to leave. SEBASTIAN gets out. AARON comes over and hugs VANESSA.

AARON
What's going on Vanessa?

VANESSA
You had some conversations with Rob, didn't you?

AARON
Here and there, you know. When he came to meet you.

VANESSA
No. It was deeper. He looked at you like they all do. Did you notice anything strange about him?

AARON
Maybe you should sit down.

VANESSA sits. AARON too.

AARON
We talked sometimes. I think he had a similar perspective to mine about the world.

VANESSA
Yes. He did. But maybe he took it too far?

AARON
Vanessa, I'm sorry, but I don't know what you mean by that.

VANESSA
I don't know either. Did he tell you about what he's working on or taking part in?

AARON
You know what he was working on.

VANESSA
But I think there was something else. Did he tell you about Project S?

AARON
No.

VANESSA
Do you know about it?

AARON
A bit, from Wayne.

VANESSA is thinking. She feels something is missing for her. AARON puts his hands on her shoulder.

AARON
Vanessa, I know you. I understand that's one of the hardest things you had to deal with. Losing someone you didn't expect to lose. It's hard to explain and understand. You remember that when Amos and I separated you started to work harder. I think it made sense for you. Maybe that's what you should do again.

VANESSA smiles, nods. She leans her head on her father, who hugs her.

CUT TO -

AARON and VANESSA hug farewell at the office's door. VANESSA leaves.

AARON goes back to his desk, then slightly puts his hand on his earphone.

AARON
VC. Indira.

2 seconds later DR. SAJEL's face appear on his screen.

DR. SAJEL
Aaron

AARON
Indira. You're becoming sloppy. Amos finds out about Vanessa, and Rob dies on you without your control.

DR. SAJEL
I'm sorry. I'm not used to doing things this way.

AARON
You should be much more careful.

DR. SAJEL nods.

AARON
Do you know what's going on with Dana?

DR. SAJEL
I'm afraid we rushed things with Rob, took too many risks with elements that weren't tested properly.

DR. SAJEL shakes her head.

AARON
So, she's in her last days.

DR. SAJEL
Yes.

They are silent for a few sad seconds.

AARON
Did you get to see Vanessa?

DR. SAJEL's eyes lit up.

DR. SAJEL
Oh, Aaron. she's beautiful.

AARON
She's perfect.

DR. SAJEL
When will she join the group?

AARON
I don't think she's ready yet.
When time comes, she will lead.

EXT.THE RAND'S WINERY - DAY

AMOS arrives at a winery. There's a sign that says "RAND'S". The winery is neglected, and the large vineyard next to it is long dry.

AMOS approaches the house, knocks on the door. After a few seconds the door is opened by MR. RAND (in his70's, but looks older).

AMOS
Mr. Rand?

MR. RAND

That's me.

AMOS
I'm agent Baer of the FBI.

AMOS shows his badge.

AMOS
Can I come in?

MR. RAND
Well. I have nothing better to
do.

MR. RAND shows AMOS in. INT. MR. RAND'S HOUSE - DAY

The house is even more neglected on the inside than from the outside.

MR. RAND
Would you like to drink
something agent Baer?

AMOS
(Signs "no" with his hand)
Thank you. Mr. Rand, yesterday you signed an authorization for Rob Rand's body to be taken from the police morgue.

MR. RAND
Well. I guess you know that.

AMOS
Did you know rob?

MR. RAND
A bit, when he was a kid.

AMOS
Why did you do that?

MR. RAND
I can't tell you.

AMOS
Why is that?

MR. RAND
I signed another paper. Confidentiality.

AMOS sighs, looks around a bit, notices a closet with "RAND" wine bottles.

AMOS
I really loved those. Can't find them anymore.

MR. RAND
Yah... Those damn genetically engineered grapes.

AMOS
Can I change my mind about your offer?

MR. RAND's eyes light up.

MR. RAND
Of course. But not those. They're just for show. I'll show you the real good stuff.

INT. RAND'S WINE CELLAR - DAY

MR. RAND and AMOS sit at a small table in a small wine cellar. Opposed to the rest of the place, the cellar is in excellent condition, carefully maintained.

The two men clack their glasses and drink.

AMOS
Damn. I missed that.

MR. RAND
You can take as many bottles that you can.

AMOS finishes his drink.

AMOS
You know. I might just do that. (pause) How do you get by?

MR. RAND
Not easy. Put everything I had in the business.

AMOS
So, I guess that if someone offers you some money to, let's say, sign the release of your brother's grandson out of the morgue, you will take the offer.

MR. RAND smiles an "you got me" smile.

AMOS
It's completely understandable.

MR. RAND
They told me that there was no crime and such. That it's weather they take the body or it's cremated. I don't think Rob would mind helping me a little.

AMOS
Who's they?

MR. RAND
This is something I'm forbidden to say. And even if I could I have to admit I don't even remember what mambo jumbo name they said. But they told me it's about science.

AMOS
Didn't it strike you odd that they will have such an interest in Rob's body?

MR. RAND
(apologetically)
I can't afford that thinking.

AMOS pulls out a fold-able TABLET, opens an identikit software.

AMOS
Can you at least describe them for me?

INT. WAYNE AND DANA'S BEDROOM/WAYNE'S STUDY - DAY

DANA is lying on the bed. She's connected to all kinds of tubes. We can see the outside view of her garden and of San Francisco from her POV.

Around her working are a DOCTOR, THE NURSE, and DR. SAJEL. They are preparing her for something.

In the room, not far from the bad, there's a huge COFFIN-FREEZER device.

THE DOCTOR
OK. We can begin whenever you're ready.

WAYNE approaches DANA. He holds her hand tight, looks at her.

DANA
I wish we could tell my parents.

WAYNE
I know. I'm sorry. They wouldn't understand.

DANA
Yes.

They are looking at each other. Wayne is switching between crying and smiling.

WAYNE
It's going to be not more than a short sleep for you. It will be an instant. You'll close your eyes and after a second you'll open them. And I'll be there.

DANA
I trust you.

WAYNE
I'm the one who will have to get by without you.

DANA doesn't answer.

WAYNE
I love you.

DANA
I love you too. (pause) Goodbye Wayne.

WAYNE
Not goodbye, just goodnight.

DANA
OK.

WAYNE signals the DOCTOR with his head that he can start.

THE DOCTOR approaches them, opens some buttons on the infusion tubes. Fluids begin to run through the tubes into DANA's body.

WAYNE holds DANA's hand while she becomes numb.

DANA tries to turn her head towards the window, to catch a last glance at the view, but she closes her eyes before doing so.

DOCTOR
She's asleep. We can begin with the procedure.

THE NURSE brings ice packs and starts arranging them around DANA. THE DOCTOR switches fluids in the infusion to something in light blue, which starts going into DANA's body and making her skin turn a little white.

DR. SAJEL
Mr. Bandura, if you may.

WAYNE lets go of DANA's hand, pulls a little backward. DR.

SAJEL stands in his place, examining DANA.

DR. SAJEL
I'm monitoring her tissue integrity so we can pace the fluid without damage.

DOCTOR
All right. Tell me if I need to slow it down.

The three are working around DANA's body.

DOCTOR
Ready to shut down pulse?

DR. SAJEL
Yes. We'll have 2 minutes to complete the process from that point to avoid any sort of damage.

DOCTOR
Here we go.

THE DOCTOR plays with some buttons on the computers controlling DANA's status. A series of "bips" is heard. THE NURSE and THE DOCTOR begin working more vigorously on DANA's body.

WAYNE turns away and starts walking out of the room. He passes through the huge house while the sounds of the three working slowly diminish.

WAYNE enters his study, then presses his earphone.

WAYNE
Aaron. I'm in.

INT. A TRAIN - DAY

AMOS is on the train. He looks at the sketch - it's of a black young man and a white man. He runs an identification search on their features that proves no results.

He enters Mr. Rand's bank account, sees a transfer of 40000$ from yesterday. The transfer covers previous debts and a little more. The money came from an "Undisclosed Account".

AMOS clicks to try and discover the origin - but his access is denied. He pulls out his phone and calls.

HELEN (O.S)
Yes, Amos.

AMOS
Hi Helen. Can you identify an undisclosed transfer for me? I'm sending you the details.

AMOS clicks on his screen. After 2-3 seconds...

HELEN (O.S)
OK. It's from something called I.E.C, which is listed as a fund. I can't tell why it received an undisclosed status.

AMOS
Try to see if it's connected to SARASWATI or to Wayne Bandura in any way.

HELEN (O.S)
It's not. All of SW' money is open to all law enforcement eyes.

AMOS
So dead end?

HELEN (O.S)
Hmmm... There's something here. I've crossed referenced. There's a chance it's connected to Walker.

AMOS
What do you mean Walker?

HELEN (O.S)
Yap. They really tried to hide it. I mean with SARASWATI if they wanted to hide something I would never find out. But I guess Walker Bio's shields are not as strong.

EXT/INT. A LAB IN WALKER BIO'S - DAY

A shot of a big high-tech looking building. "WALKER BIOTECHNOLOGY AND PHARMACEBTICS" is written on it.

Within the building, inside a lab, we see three men - TWO YOUNG MEN (who's faces are those portrayed on Amos' sketch program) and another BLACK MAN (50's, dressed in a very expensive-looking suit).

The YOUNG BLACK MAN is the same one who commanded the soldiers on the cold open scene.

The two YOUNG MEN drag a STRETCHER. ROB RAND's body is on the stretcher.

The DISTINGUISHED MAN looks at Rob's body.

DISTINGUISHED MAN
So. What went on inside of you?

THE END

California Nation

Sci-Fi/Mystery TV series by Eran Medina

Logline

A young, brilliant & troubled scientist, who develops human cognitive enhancement technologies, wakes up one day and it's 5 years in the future. California turned into a fascist country where enhanced people rule the "regulars", much because of the technology she developed. Believing the reality around her is a dream, she sets out to free her imprisoned adopting father and fight the government, hoping it's the key to her waking up.

Story

VANESSA JACOBS-BAER (27) is a prodigy scientist. She finished her PhD at the age of 17 and started to work in the innovation labs of SARASWATI (nicknamed SS), the leading technology giant. She worked in a team which developed cognitive enhancement (HE, for Human Enhancement) technology and made huge advancements. When the technology was ready for testing on people, she volunteered to be the first to go through the procedure.

And then she wakes up one day, 5 years later.

She begins discovering the world around her:

- Everyone around her knows her and treats her like she's regularly been there yesterday. So… she wasn't in a coma or something like that, she was alive and working. The people around her know her, but she doesn't know most of them.
- She is guarded in a special way, escorted everywhere.
- Her team members are not there, and it seems that she is running the HE lab.
- The technology she works with is much more advanced than before, but somehow, she knows all about it.

Vanessa doesn't know how to take it all. She thinks **this might be a dream**. She intuitively decides to act like everything's normal and wait until she meets someone, she really trusts to talk with him and figure it out.

"Someone she really trusts" could only mean either one of her two fathers: **ARON JACOBS**, a charismatic Political Sciences Professor at Berkeley, and **AMOS BAER**, a retired FBI agent. The two were married when they had Vanessa but separated later.

Vanessa wants to reach them, which seems to be difficult cause the people who guard her for some reason try to deny her the information or going freely to wherever she wants, so she starts doing it covertly, even uses her super-intelligence and manages to escape from her "quarantines". She discovers some more disturbing things about the new world she woke up to:

- California is now independent.
- It looks like there is some sort of a military regime, aided by awe inspiring enforcement technologies. Vanessa sees some shocking executions and the fear it caused.
- Aron, her father, is a very high-ranking official in the California governing body, with the duty to design the governing system.
- Amos, her other father, is in prison. Later she realizes he's in prison for trying to abduct/rescue her, a day before she woke up (this event probably triggered her "waking up" in some way).

Vanessa quickly realizes that this nightmare world is driven by her own work! That those who rule do it with the help of the HE technology she developed. It is an overwhelming recognition which she cannot accept.

Vanessa now tries to locate the missing team members from her lab, manages to rich the mother of one of them, to discover she's dead… probably executed.

Believing this is a dream she desperately shouts ***"I learned the lesson. I want to wake up!"***. But she doesn't.

When she meets Aron, she breaks down. He's her daddy, and she trusts him to solve her problem. Surprisingly he encourages her to keep up the work she's been doing and not to tell anyone she regained her self-awareness. He tells her when she went out of the procedure it looked like it was a success: She performed at a level of 300IQ or more, speeding up the development tremendously. However, later it seemed like she's somehow "missing", acting a bit like an autistic person or even a "human robot", only talking and doing things regarding work. She is now considered an "asset", because her knowledge and abilities in the technology are unique. When she tells him about the horrifying reality he is shaken – of course he knows all this, but he still believes that things can change and that his dream of an Enlighted Meritocracy could become true. There are things he hasn't foreseen, but he needs to continue the work, and wants her to do the same and help him. Aron is also fearful of what will happen to Vanessa if it will be discovered that she is "herself" again, or even worse – that she is against the regime.

Aron's advice only shocks Vanessa more, and her response is again to deny all of this is a reality. She is a genius, but she is an unstable child who can't face her responsibility in the creation of this nightmare, wants to completely rely on her father but what he says doesn't "sit" well with her. Aron uses her thinking that this is a dream and encourages this line of thought. It's better that Vanessa is insane than dead.

A dream or not, Vanessa now knows she needs to free her second father – Amos – he will know what to do.

<u>Story world</u>

2029. All kinds of Human Enhancement started to change humanity a few years ago. People, through genetics, implants or drugs started to alter themselves: Boosting

intelligence, creativity, build strength & physical ability, stop aging, avoid the need to sleep etc. All of those are still mild enhancements, not huge leaps yet.

Scandals & criticism that HE creates a gap in favor of those who can afford it ignited a movement that persecuted enhanced people. The worst victims were children whose parents used genetic engineering to give them advantages – some of them were slaughtered, others were on the hide.

USA and the rest of the world quickly wrote laws against enhancement (banning further use of it, but also restricting the enhanced rights to work or to possess capital), which eased the situation a little bit. Still there was a lot of racism against enhanced, and even trading them.

For some, mainly technology tycoons from California, the dream of "bettering" themselves, gaining unimagined abilities, eternal youth and immortality, was still alive and in their minds within reach. They secretly continued conducting this kind of R&D. Vanessa worked in one of those.

The development that Vanessa and her team made, helped them to fulfill their dream – and after Vanessa showed it is possible to truly enhance someone in a big way, they used their technological powers and performed a coo: Declaring California an independent nation, where HE is legal, and all enhanced people are welcome.

California set up borders, declared San Francisco as its capital, and almost overnight created a powerful security system using technologies created by SS industries. USA couldn't ignore its existence, and was dependent on California economically, but there was a lot of tension between them.

California itself started with a vision of a better society dedicated to the advancement of humankind. Vanessa's father, Aron, who was a high esteemed political sciences professor and a visionary advocating for a Meritocracy, was asked to lead the establishing of the new nation.

Sooner then later things started to fall apart, when issues such as massive immigration to the wealth and bounty of California started, or questions like "who deserves citizenship?". Aron found himself weak against the two real "players" behind the new California: **SIERRA NEWMAN** and **WAYNE BANDURA**.

Newman is the head of "Newman Biotechnology", a huge drug & supplements company, whose dream is to crown her son as the most powerful man in the world. Bandura is the owner of "SS", and he joined the California conspiracy after cryonically freezing his beloved & dying wife and his need to be free from the "Anti-Enhancement laws" limiting his ability to pursue the research to find a cure for her.

Newman and Bandura co-operated in establishing California, knowing they need each other for that, but there's a hidden (not for too long…) power battle between them. In the battle between them, there are 2 major "cards": (1) Bandura's wife frozen body, which Sierra gets a hold of at some point to force Bandura to give her control over SS' technologies. (2) Vanessa, and the knowledge in her head about HE which everyone

desires. In her "autistic years" it seems that Vanessa never fully explained the technology – she just did it. Without her the HE operation takes a plunge.

Not long before the show begins a new president is elected in the USA: **STANELY BUCHANEN**. Buchanen cancels all the agreements with California. He got elected after USA's economy suffered crisis, and hatred for the enhanced and for California went crazy. Buchanen claims California is part of USA and says that if Americans will fight together, they will eventually take it back. Newman & Bandura know that it is true – the technology won't overcome 200 million people. But further development of HE might give them the needed advantage. This makes Vanessa extremely valuable.

California turns into a military state. "Regular" people are second rate citizens. An underground movement (with an unusual bond between liberals & extreme religious is formed) rises, and the Meritocracy turns into a tyranny. The underground targets Vanessa. Aron, who sees his dream society turns to shit, tries to protect her and maybe hang on till the storm passes and he can turn California into what it was supposed to be in his mind.

Characters

VANESSA – 27 y/o neuroscientist. The daughter of Aron & Amos. She doesn't know that she is genetically engineered – the working of Aron (without Amos knowing it) and an Indian genetic specialist: Dr. Indira Sajel. Biologically she has no clear parents, though there is Aron in her blood (and most likely some of Dr. Sajel herself). Being engineered she is as close to perfect as can be: Genius level intelligence, beautiful, physically healthy. Aron has always pushed her to be the best she can be, "excellence" being the most important value, while Amos loved her unconditionally. When the two separated Vanessa remained with Aron. She finished her doctorate at 17, and immediately got a job at SS secret labs.

At 22 she volunteered to have the HE device implanted in her brain. The result was her coming out with unimaginable cognitive abilities, but her own personality has "vanished". Later it will be discovered that people can't handle such an upgrade if their personal identity and value system isn't complete and mature. This was the case with Vanessa, who lived her life under Aron's influence and drive for perfection. She never completely formed her own personality.

During her "robotic" years she was guarded and handled by a special unit. Her work created the ability for Newman & Bandura to increase their power and turn upgrade the people they needed.

Her waking up 5 years later was triggered by Amos' attempt (together with the underground resistance, who wanted to kill her) to release her. This experience probably "touched" something emotional inside her, something that "belongs" to the "real" Vanessa, maybe maturing her in some way – and the next morning she wakes up.

Desire/goal: To return to the world from before; To ease her guilt for helping to create this world; To free Amos from prison; To fight against the California government, including Aron.

Opponents:

- **MIA CHANG** – the head of security forces of California;
- **ADAM NEWMAN** – Sierra Newman's son, who tries to haunt her down after she escapes;
- ARON – who actually wants to protect her and believes her continuing her work with no questions asked is the way to do it (plus it's the way to still achieving his own dream);
- Sierra Newman – who needs Vanessa's knowledge in continuing the development of California;
- The Underground & USA's espionage – who know Vanessa is a key to California and seek to either capture her for their own use or kill her, so Sierra won't be able to use her.

Allies:

- Aron – who wants to protect her.
- Amos – who loves her and wants to free her, protect her from everyone and joins her in her fight against Sierra.
- Sierra – who needs her to be safe for as long as Vanessa is the only one who knows the technology.

Moral issues:

- Denying reality by thinking this is all a dream, which rises whenever she encounters violence (she might even kill someone, rationalizing it as "It didn't really happen").
- Deciding who's "the right side" she needs to give her abilities to and work for: Is it California that strives to protect the haunted enhanced and could lead to the development of mankind? Is it the underground who fight the fascist government? Is it USA?
- As an enhanced person – are her abilities "private" or does she need to "give them" and use them for the rest of the world?

Storyline & Arc: Waking up > discovering the world > seeking the way to "wake up" (which fails) > freeing Amos & escaping out of California > Being on the hide from everyone… refusing to take action and using her abilities > Taking responsibility and starting to upgrade other people (Amos first) in order to fight Sierra.

ARON JACOBS – a 55 y/o political sciences professor at Berkeley. Jewish & gay. Extremely charismatic. His philosophy advocates for Meritocracy, thinking this is the only way to ensure the continued progress of the humankind, and solving its challenges. The "Anti Enhancement" laws serve as a proof to his theory (Also – according to these

laws Vanessa is forbidden to work in her profession). He has a strong value of "being the best you can be", which is evident in the way he raises Vanessa.

He is a close friend of Wayne Bandura & Sierra Newman, who with his inspiration lead the California coo. Aron is asked to be in charge of designing California's governing system – a dream coming true for him. But the dream crushes when Bandura & Newman overhaul his decisions to their own agendas.

Desire/goal:

- To turn California into a Meritocracy that advances humankind.
- To protect Vanessa.

Moral issues:

- To cooperate with Newman & Bandura with the hope of influencing things to the right direction, or to go against them?
- To keep Vanessa "numb" and exploit her weaknesses in order to keep her safe and working, or to help her "regain her senses" and escape – which is more dangerous.
- How long to hold on to his "Meritocracy" dream when it turns into a fascist dictatorship, and for how long to face it in non-violent ways?

Storyline/Arc: Trying to "keep" Vanessa numb in order to protect her & trying to "buffer" Sierra Newman's growing dictatorship.

AMOS BAER – a 58 y/o former FBI agent. An "old-school" type, resenting technology. Ideologically completely agrees with the "Anti Enhancement" laws, however injustice is a much bigger problem in his eyes. When California is declared, and the FBI branch is shut down, he is offered the job of "enhanced rescuer" – to go and help enhanced people who are haunted in USA and bring them to California. He does that very well, driven by the fact Vanessa is also enhances.

He and Aron were married for 10 years, in which time they brought Vanessa to the world. They agreed to "mix sperm" so each one of them has a chance to be the father. He didn't know that Aron had Vanessa "engineered". He assumed Vanessa is from Aron because she is supersmart but loved her deeply anyway. His disagreeing with Aron's way of bringing Vanessa up is one of reasons for their separation.

When California becomes militant, and laws that treat "regulars" as second-rate citizens are issued, Amos starts making contacts with the underground. He is kept from seeing Vanessa and learns that she is responsible for some of the enforcement technologies (such as creating very strong, very fast & very obedient soldiers). When the underground plans an attack to kill Vanessa, he joins it to protect her, maybe free her. He sabotages the attack, gets 2 members of the resistance killed and himself arrested. Aron's intervene in preventing him from being executed for the time.

Desire/Goal:

- To protect Vanessa.
- To protect other abused enhanced.

- To fight injustice and bring the California government down.

Moral issues:

- How far to go with protecting Vanessa? To sabotage the resistance attack and get other people killed?
- Protect Vanessa and deny her to take part in the overall war or support her?

Storyline/Arc: Tries to survive in prison against resistance members who want to take revenge on him & the security forces torturing him to reveal info about the resistance > Freed by Vanessa from prison and escaping California > Being on the hide & continue rescuing enhanced, forming a small "enhanced sanctuary" > Volunteering to be enhanced himself by Vanessa in order to resume the fight against California.

SIERRA NEWMAN – 55 y/o black woman, owner of "Newman Biotechnology", a giant drugs & supplements company. Brilliant, cruel, streetwise. Strongly believes in "Transhumanism" & "unnatural selection" – that mankind can continue better itself and reach immortality and god-like control over the universe. She dreams that her son, ADAM, will be the leap. Like Vanessa, Adam was also cocooned by Dr. Sajel, even before Vanessa, but he was born deformed & sick. Sierra, already one of the richest people in the world at the time, devoted herself into turning this ugly mouse into a god. She put in her company's resources, surgeries, prostheses and rigid upbringing with the best teachers and coaches that money can get to do it.

Sierra herself is the daughter of a prostitute & a drug dealer/junkie. Really the worst place for a child. As a gifted kid she self-taught everything, including plenty about Biology & Chemistry. When she was 11, she poisoned her parents' drugs and killed them, disguising it so the police thought of it as two junkeys overdosing.

Sierra moved between foster homes, temporarily even landing at Aron's parents. But she practically grew herself up, starting her own supplements business at 22. Showing a great nose for business, "Newman Biotechnology" became the leading power of the supplement market, marketing pills for concentration, growing taller, losing weight, energy boosters, libido & penis enlargement etc.

She took a major part in the establishment of California, and quickly afterwards started to take over it – financing the security forces and using manipulations to force her own agenda on it. When the show begins, she is one of the two in power – the other being Wayne Bandura. Sierra believes in the fascist idea that the world should belong to the fittest and the strongest, and that their will, through technology, should be the driving force of nature, selection and the world in general.

Desire/goal:

- To take over California, eliminating rivalries, and make it into a place where "unnatural selection" exists and changes humanity.
- To make her son the strongest, smartest, god like immortal ruler of the world.
- To hold and exploit Vanessa's abilities in order to achieve the former.

Moral issues:

- "Transhumanistic" Fascist ideology.
- "Being better" before anything – let her son suffer through childhood to make him a god.

Storyline/Arc: Manipulates to weaken Wayne Bandura and hold power over California & Wayne's SS industries > Trying to get hold of the crucial Vanessa once she escapes > Leads California with force, fighting challenges from the inside (the Resistance) and the outside (USA & president Buchanen).

MIA CHANG – 32 y/o, head of security forces in the new California. Ruthless. Was a prodigy in the FBI and at a young age the director of the FBI in California (and Amos' boss). She was proud of being the first Asian woman to reach a position like that. The California coup d'etat happened with her help. A strong follower of Sierra Newman, who works with the hope of becoming "enhanced" herself one day and the belief she can be immortal.

WAYNE BANDURA – 45 y/o technology tycoon. The owner of "SARASWATI" (SS) industries, a company which turned many technological dreams into a reality. SS' technologies & control over data in the world were the key factor in the California coo. It was made possible only when Wayne decided to join the conspiracy.

- Wayne beloved wife, Dana, had cancer and was about to die. Wayne, a man who How long to hold on to his "Meritocracy" dream when it turns into a fascist dictatorship, and for how long to face it in non-violent ways?

never says "impossible" had Dana cryonically frozen until he could manage to develop a cure. Since the research needed is illegal under the "Anti Enhancement" laws, he joined Aron & Sierra in establishing California.

Contrary to Sierra, Wayne believes that the enhancement technology should eventually belong to all the people, that if one person can live forever then everyone should have this possibility. This will grow to a clash between the two, and when Wayne is on a journey to Washington to achieve an agreement with president Buchanen (Owning SS, Wayne holds the most coveted financial power) – Sierra organizes an assassination at Wayne, disguised as an "Anti-Enhancement" hatred attack. Wayne scarcely survives the assassination and left to manage his way back to California without any of his resources.

ADAM NEWMAN – 28 y/o man. 6"6, sculptured, but slightly strange "artificial" looking, like a doll. When standing next to his very short mother it's evident something here is unnatural.

Adam works as Sierra's second and "special missions" guy. He knows what she hopes for him and tries to meet those expectations. Being trained in martial arts, chess, languages, swimming, acting etc., he has plenty of tools. He is the direct commander of the unit taking care of Vanessa "the asset", and when she escapes, he is going to find her – understanding she holds the key to his own future and enhancement.

Adam's relation with Vanessa is complicated. He loves and hates her at the same time. He knows that she is genetically cocooned like him (she doesn't know that), but he also knows that she was the "successful experiment" of Dr. Sajel, which followed and

corrected out of his own "unsuccessful" one, that caused him misery growing up. In his mind there is now a chance to have poetic justice – after she was the "unsuccessful" enhancement implant experiment, he could be the correction. However, Vanessa and him grew up side by side (as much as was possible between their tight schedules), and he has love and feelings of connection with her.

Adam also is not quite sure that his mother's path is the right path – he would like to see a more equal society. He thinks that by following the realm he will one day be in power and will get the chance to change things.

Season 1 possible storylines

- Vanessa waking up, exploring the world and moving between accepting it as a reality and believing it's a dream. Aron trying to "keep" her numb/"crazy" and/or acting as one for her safety.
- Amos' survival in prison against resistance revenge and Mia Chang's interrogations.
- The power battles between Sierra, Wayne & Aron over California with Sierra taking power by arranging an assassination at Wayne's life.
- Sierra facie underground and USA threats to her regime.
- Wayne journey through USA back to California.
- Vanessa freeing Amos from prison and escaping California.
- Adam's search for Vanessa, Vanessa & Amos in hide out, helping enhanced people in need.

Trans-H

Trans-H: Series synopsis

Logline

In a world where people can purchase brain implants that enhance their cognitive abilities, a "Robin Hood" like enhanced biohacker continues his dead brother's life mission, and tries to compete and take down the monopole enhancement corporation, which he thinks is responsible for his brother's death.

One day, maybe sooner than we imagine, people will be able to transcend their biology and enhance their abilities to levels far beyond those of nowadays sac of bones and flesh we call the human body. How will it influence humanity? Will it be the end of what we now consider "human"? TRANS-H is a series that tells the story of a world disrupted by the beginning of radical enhancement technologies, and how it affects society and human life. Its interconnected stories show enhanced and "regular" people coping with challenges and conflicts that this new reality presents.

TRANS-H is set in an alternative present, in a world very close to ours but with one major difference – the enhancement technology and its consequences. Similar to shows such as HUMANS, YEARS AND YEARS and MR. ROBOT, this setting is meant to create relatedness and familiarity and facilitate stories that are not just flashy-techy, but also dramatic, personal and evoking empathy. It also serves the theme that suggests enhancement is at our doorstep, and we should start thinking about how we want to handle it.

TRANS-H wants to grab the audience's attention with a science fiction action story full of tension and mystery, and then touch their souls with care for the characters who struggle to adjust their lives in the face of change and provoke thoughts about life in the enhancement age.

Main characters & seasonal storylines

JOSIA ZAINER (30 y/o) - A biohacker who is offering pirate cognitive enhancement implants. He does so because he believes that enhancement is something that everyone should be able to afford and not just the rich, as it is the case with the monopoly of the big enhancement corporation – "NEWMAN". Josia continues the work of his brother, EZRA, a brilliant Neuroscientist, who was killed in a mysterious circumstance. Josia is sure that NEWMAN are behind his brother's death, and he is set to both take them down for controlling the enhancement industry and to prove that the company's owner, SIERRA NEWMAN, is responsible to his brother's death.

Josia manages to overcome schizophrenia using the implant that his brother developed and implanted in Josia's brain.

Throughout the season Josia tries to co-operate with ARON JACOBS to set laws to restrict NEWMAN. When this doesn't work, he recruits and trains other biohackers and enhanced people who will offer free enhancement, "break the market" and take NEWMAN out of business. He also tries to investigate and find out who is responsible for his brother's death (by the season's end he will reveal it is not Sierra Newman but won't discover who it is). As the season progresses Josia needs to hide and escape from several enemies: NEWMAN's security people who try to track him and shut his operation down, and a group of anti-enhancement fanatics who mark him among the leaders of enhancement.

SIERRA NEWMAN (45 y/o) – The founder and owner of NEWMAN corporation. She is not a scientist, but she did know how to grow the business, hire the right scientists, buy or steal the right technologies. Eventually, after getting enhanced herself, she also turns herself into the top expert in the enhancement technology. Sierra has two main goals: (1) As a black woman who grew up suffering from racism and discrimination, seeing her drug addict mother dying with no help from authorities, Sierra wants to use the power of controlling the enhancement market to completely change the social order – she enhances, on purpose, a majority of black, Latin, Asian, gay, Jewish people and women, planning to create a new elite. (2) Sierra has a son, ADAM (14), who responded badly to the early implant she gave him and is now retarded and deformed. Sierra tries to perfect her technology so it could rehabilitate Adam and turn him into the superior man she intended him to be. When she comes across the advanced implant Ezra designed (and Josia uses) she wants to both get a hold of it and take Josia out of business by any means necessary, so she can preserve her monopoly.

Throughout the season Sierra fights off the attempts to restrict her business and the rights of enhanced people by a public committee, and chases Josia who both creates a threat to her by his operation and holds a technology she covets. When the anti-enhancement fanatic movement starts killing enhanced people and mark her as a leading target, she has to join forces with Josia in an effort to save the enhanced people.

VANESSA JACOBS-BAER (13 y/o) – An enhanced girl, a super-genius who has better cognitive abilities even than most enhanced people. Her father, ARON, got her enhanced when she was 6 years old. Since, she managed to complete a PhD and design solutions to reverse global warmth and mend air pollution. Now she is bored. Her father has a plan for her to become president one (not so far) day, but she doesn't necessarily share his vision. She is a teenager who can't find anything or anyone interesting enough. She embarks on a series of adventures unfitted for her age, teams up with the elderly and enhanced ANDREA to commit a series of robberies, seeks sexual experiences and more. Maybe knowingly she allows herself to get caught and gets in trouble with the police, from which her father works to get her discharged. As she continues her rebellious path and the anti-enhancement voices become louder and more violent, her father sends her away to live for a while with her other father, AMOS, and her non-enhanced sister, CLAUDIA, in a small place in the mountains. The quiet place and her non-enhanced family drive her insane, but the experience matures her and when she decides to join Josia's "army" of free enhancers. Near the end of the season Vanessa is kidnapped by the anti-enhancement group, tries to escape but fails.

ARON JACOBS (50 y/o) – A gay senator and Vanessa's father. Aron is a believer of enhancement and of its potential to improve life, although not enhanced himself. He wanted to enhance both his daughters – but his second daughter, Claudia, feared the process. The family conflict over the enhancement caused the family to break apart, with Aron's spouse – Amos, who was against enhancement and disapproved of Aron's obsession about it – taking Claudia and move to a distant place. Vanessa wanted to stay with Aron.

Aron has high hopes for Vanessa, and for a few years it seems that it goes as planned. Vanessa's rebellion and boundary testing are a test for Aron.

As a senator Aron is appointed to head a committee that is supposed to suggest laws and regulations for many issues raised about enhancement. The committee becomes an arena for the conflict between the anti-enhancement people and Sierra who wishes to use the committee to ban pirate enhancement (and so to strengthen her own tight grip over the market). Aron's goal is to pass a law that takes the enhancement screening process out of the hands of Sierra, understanding that if he can control who gets enhanced – he can shape the world. He collaborates with Josia who gets him information he can use against Sierra.

ANDREA WALDMAN (60 y/o) – An enhanced medical doctor who gets addicted to expanding her abilities. She gets her first implant before NEWMAN decides to restrict enhancement to people under 40. The implant helps her graduate from Harvard medical school as top of her class and in a short period of time, and she becomes a successful doctor. Like Vanessa, she gets bored after a while and seeks new challenges. Since NEWMAN never give a second implant to people, she reaches Josia and asks him for new implants and challenges the "Pattel barrier" (a concept invented by a scientist who claimed that the brain can "contain" only so much enhancement, and if it receives too much the personality collapses). Andrea pulls it off and gets re-enhanced by Josia twice. She loves the process of gaining new abilities, accommodating a new implant and sensing how it expands her brain, thoughts and experiences.

Throughout the season Andrea meets Vanessa and "mentors" her out of her boredom to a series of pseudo-robberies. At some point Vanessa goes too far and Andrea is arrested because of her and loses her medical license. Later Andrea joins Josia in his campaign for free enhancement.

BRAD MARZANO (35 y/o) – The father of SOPHIA, a girl who undergoes a pirate enhancement by Josia and doesn't wake for a long time. His wife, Joana, haunted by guilt for being the one pushing to get Sophia enhanced, kills herself by walking in front of a truck, hoping her insurance money will help Brad pay for Sophia's hospital bills. Because her act is determined a suicide, he doesn't get the money.

Brad, who was against enhancement in the first place (after losing his technician job when enhanced people design machines that makes it redundant), accepts Sierra's offer to take the unconscious Sophia to NEWMAN's labs. He then joins the group of anti-enhancement, led by a priest called FATHER MORROW, and takes part in their escalating actions. Brad is trying to find Josia and kill him, and he is the one who

kidnaps Vanessa. Yet, while holding Vanessa as a captive, Brad understands he became too violent and tries to navigate himself out of the anti-enhancement organization and help Vanessa escape.

SOPHIA MARZANO (8 y/o) - A girl that goes through an enhancement implant operation by Josia but doesn't wake up. While unconscious, her mind enters a surreal "Wizard of Oz"/"Pan's Labyrinth"-like place in which she has to solve riddles and overcome "THE MASKED MAN" (who is the image of Josia, whom she saw only wearing a mask) to get back home to her mom and dad. The riddles and the challenges she must solve deal with her dealing with her shortcomings and holdbacks – like her very low self-esteem, the fear of failure and not trusting herself. The surreal character of the Masked Man, who at first appears to be her antagonist who denies her from returning home (meaning waking up), turns out throughout the series as her "internal mentor" preparing her for life as an enhanced person.

Sophia's sleeping body is transferred to NEWMAN's labs, there Sierra wants to explore the implant she received from Josia. Sierra, at first, tries to study the implant's function without taking it out of Sophia's brain, but when she reaches the limit of this kind of research, she wants to remove it, an action that will endanger Sophia's life. When Josia learns about Sophia being held at NEWMAN he organizes a break-in and "steals" her (letting Sierra get her hands on his implant technology is something he cannot allow). With this action Josia saves Sophia's life.

At the end of the season Sophia finishes her "training" and wakes up in the hands of Josia and Andrea. She wakes up not knowing that her mother is dead and her father, at that very moment, is in danger after kidnapping Vanessa and currently trying to help her escape.

MARIA KAPLAN (28 y/o) – Head of security at NEWMAN. Enhanced. She's a Latin woman, working as a security guard at NEWMAN, who married JOSH, a Jewish intellectual musician (who can't make a living due to the music industry taken over by enhanced people). Josh' mother constantly looked down on Maria, whom she thought is beneath her son's standard. Yet Maria and Josh were strongly in love.

As an economic decision Maria and Josh decide to get Maria enhanced. This means taking all their money plus huge loans, and not knowing if Maria will even pass the screening and gets approved to be enhanced. They gamble their future on this. Maria does get cleared and Sierra likes her so much that after her enhancement she offers her to become head of security.

Josh lovingly treats Maria during her long and painful adjustment period (after the implant procedure there's a varying period in which the newly enhanced is either unconscious or suffers tremendous pain and delirium – while the brain "readjusts" itself). However, when Maria recovers and become enhanced, she starts falling out of love with Josh – he seems redundant to her, almost like a pet, and she loses her patience with him. She tries her best to hide it, feeling in debt to him, but he senses that. Josh is driven to cheat on Maria finds it out easily but chooses to let him have his fun. When they try to get Josh enhanced as well – he doesn't pass NEWMAN's screening (Sierra,

who controls the screening process doesn't enable him to pass because he is a man, and she assumes Maria's loyalty to her will be stronger if she won't have an enhanced husband).

As NEWMAN's head of security, Maria is Josia's biggest threat. She chases him and even manages to locate him and almost catch him. Once she even succeeds in catching him, but then it is revealed that while surveilling him she became more aware of his agenda of enabling enhancement to everyone, and that his implant is as safe as NEWMAN's (a fact that Sierra is hiding) – so Maria lets him off and covertly seems to turn to his side. She is loyal to Sierra who did a lot for her and believed in her, but at the same time gradually understand that the morally right side of this conflict is Josia's. Near the end of the season Maria takes an active part in saving enhanced people who are haunted by the anti-enhancement movement and co-operates with Josia.

Trans-H

A screenplay for a TV series pilot Episode title: "Useless People"

by

Eran Barak Medina

INT. PSYCHIATRIC WARD -- DAY

JOSIA ZAINER, mid-'20s, walks around the ward nervously. This man is a wreck. He's dressed in a warn outdated jogging outfit that's two sizes larger than his thin figure, messy uncut hair.

Josia mumbles something to himself, then shakes his head strongly, as if trying to get rid of an irritating fly floating inside his skull.

Other INPATIENTS are going about their own business.

He comes across a NURSE who's trying to persuade a WOMAN INPATIENT to surrender a vague DRAWING she worked on.

NURSE
I'll keep it for you 'till you get back from the session.

The INPATIENT protects the drawing with her body, refusing to budge.

NURSE
You have to go, now.

Josia snaps. He approaches the NURSE aggressively, bursting with the words he so desperately tried to hold inside.

JOSIA
The history of societies is the history of class struggle.

The Nurse startles, releases a short, unwilling scream. Josia laughs triumphantly for a second, but quickly returns to his fury and verbally attacks the nurse again.

JOSIA
The only antidote to mental suffering is physical pain.

NURSE
You scared the shit outa' me, you little...

She stops herself before saying something she's not supposed to. A loud announcement on the speakers interrupts them.

ANNOUNCEMENT
Josia Zainer, you have a visitor.

Josia immediately turns to watch the nurse's station, where the announcement's coming from. He sees, standing near the back of the nurse's station, someone he knows, someone he loves. This is EZRA, 30, good looking, serious, glasses, dressed simply, but it looks well on him.

Josia switches between a smile and a cry four times in a second.

JOSIA
(mumbles, almost crying)
The production of too many useful things results in too many useless people.

INT. TREATMENT ROOM -- MOMENTS LATER

Josia stands in the middle of the room, not knowing exactly what to do with himself. Ezra stands near the entrance, inspects Josia for a few seconds. Josia narrows his eyes, trying to figure out what Ezra wants from him.

Ezra walks to Josia and hugs him. It's a strong, big, loving hug. Josia's body softens. A great deal of the nervousness and tension in him fades.

Ezra's eyes moisten.

EZRA
I missed you brother.

MOMENTS LATER

Ezra and Josia are sitting next to a table.

EZRA
I need you to completely understand what I'm saying and to make an important decision. Is there enough clarity in you to do that?

Josia is thinking. He doesn't mumble right now. He looks away from Ezra for a second, looking at his own hands and legs, as if searching within himself for the clarity that Ezra asks of him. He raises his eyes again and nods - YES.

EZRA
Good.

Ezra leans forward.

EZRA
I think I can help you. I've developed something that might be able to give you just enough control over your mind. You will still have those thoughts, but you'll probably be able to handle them.

JOSIA
I want it.

EZRA
But there are risks. It's going to hurt for a long time. Terribly.

JOSIA
I want it.

EZRA
And for a while, the thoughts will amplify, cause that's how it works until you learn how to overthink them.

Josia shakes his head strongly.

JOSIA
I want it.

EZRA
And there's a forty percent chance it won't work, and you'll get stuck in it forever. It will be much worse than here, than now.

For a second Josia is not as sure. He gazes into the air, seems like he's calculating something, breaths heavily, then turns back to his brother, more focused than we've seen him so far.

JOSIA
Death is better than here and now.

INT. NURSE'S STATION -- MOMENTS LATER

Josia changed clothes, appears more decent now, his hair wet and tidy, firmly clenching his packed bag. He's agitated, impatient, rapidly moving his feet.

JOSIA
(mumbling)
You have nothing to lose but your chains. You have nothing to lose but your chains.

Ezra is signing some papers in front of the nurse, who watches them, skeptical.

JOSIA
You have nothing to lose but your chains.

Ezra has finished signing. He stands up.

NURSE
Well. He's your responsibility now.

INT. EZRA'S LAB -- DAY

Ezra's lab is full of all kinds of computers, chip-manufacturing machines and more technological stuff.

Part of the lab is transformed into a small clinic/surgery room. Josia is there, lying on the operating table, head shaved, facing down. There's a hole in the bed where the head is, to give some space for the patient's face. Ezra is making preparations. POV from the floor upwards: Josia's mouth and nose are covered with an oxygen mask. He breaths slowly, his eyes become heavier and heavier until he's completely sleeping.

MOMENTS LATER

Ezra makes a long, deep cut behind Josia's right ear.

SECONDS LATER. Ezra picks up a strange-looking IMPLANT DEVICE: it looks like a small, transparent, electronic JELLYFISH, with circuits as it's flesh and many tiny, elastic, silicon arms.

Josia's head is wide open from the cut behind the ear. His BRAIN is showing.

Ezra carefully inserts the implant into Josia's head, slowly starting to connect it to the organic brain using some sort of a STICK which resembles a hot-glue gun.

When the implant is attached to the brain, it looks like an extension of it.

EXT. A DAM -- DAY

Josia is standing in a VALLEY, in front of a medium-sized, improvised DAM, made of an eclectic collection of bricks, planks, squeezed clothes and anything else that can hold the water.

He looks at the dam, like guarding it. He hears the sound of the water on the other side, swarming, announcing its intention of breaking through the dam.

Suddenly a little bit of the dam gives in, and a narrow but strong stream of water breaks through it.

Josia hurries and plugs the hole with his hand.

Another hole opens. Josia tries to reach his arm towards it, learning that his arm can extend longer than its normal length to cover that hole as well.

A third and fourth hole opens. Josia discovers he has more hands, and he can extend them to plug the holes as well.

Seconds later Josia has more arms than an octopus, all busy covering holes in the dam. It's not easy, though, and the effort clearly shows on his face.

EZRA (O.S)
Josia...

CUT TO:

INT. EZRA'S LAB -- DAY

Josia wakes up abruptly. It takes him not more than half a second to fully experience the enormous pain. His face twitches. He screams.

Ezra is next to him, leaning towards him, stroking his head with concern.

EZRA
It will take some time, but it will go away.

Josia tries to say something, but it's difficult.

JOSIA
G... Give... Sl... Sleep...

Ezra bites his lips, looks at Josia with empathy.

EZRA
I'm sorry. I can't have chemicals messing with your neurotransmitters at the moment. Your brain is rewiring.

Josia looks at him pleadingly. This pain is tormenting.

INT. EZRA'S LAB -- DAY

Josia is inside an MRI machine. He looks better, gained some pounds, his hair starts to grow again.

Ezra watches the MRI images of Josia's brain on a screen, showing the implant integrated with the brain, taking part in the neural activity of the brain. Ezra is pleased by what he sees.

EZRA
What is the square root of 145161?

JOSIA
381.

EZRA
And the square root of that?

JOSIA
19 point 51922 and some more. Boring. You're just playing with the little calculator you put in my head.

EZRA
Yeah, it's cool, isn't it?

JOSIA
People don't say cool anymore.

EZRA
I'm going to stream something to your implant. It's like sending an email to your brain.

JOSIA
People don't do emails any more as well.

One of Ezra's screens runs plenty of texts, scientific articles. The other screen shows the activity in Josia's brain. It's going very fast as if someone fast forwards a recording of an MRI session.

Josia creases his forehead, concentrating. When the stream ends...

JOSIA
(concisely)
Yeah.

EZRA
You know why I did it?

JOSIA
I guess you want me to implant one in you.

EZRA
Exactly. (beat) it works beautifully on you. I think we're even a step ahead of Newman.

Josia is in deep thought.

JOSIA
I can see how we can make it better, lower the risk too.

Ezra chuckles. The student is outgrowing his teacher, and so fast. But then something unpleasant crosses his mind.

EZRA
There's one more thing I need to ask of you, Josia.

JOSIA
Sure.

EZRA
I need to trigger you. See how you cope. (beat) I want you to describe the moment you found mom.

Josia's face is taken by sadness. On his screens, Ezra sees how deeper parts of Josia's brain turn raging, violent red, while streams of blue flashes coming from the cortex and the strange little "brain extension" are trying to hold the red barricaded.

JOSIA
(with cracked voice)
Do I have to?

Ezra moves his eyes from the screen to Josia, struggling, literally working his muscles to contain the thoughts and feelings inside.

EZRA
No. You don't.

INT. SMALL CONFERENCE ROOM -- DAY

Ezra, shaved head and a scar behind his right ear, is lecturing in front of FOUR DISTINGUISHED PEOPLE. His presentation shows how the implant works.

COMMITTEE MEMBER
So you're telling me you can manufacture enhancement implants as good as Newman's, at one percent of their price?

EZRA
Less actually, and better. Than Newman I mean.

COMMITTEE MEMBER
It sounds too good to be true.

EZRA
An enhancement implant shouldn't cost millions of dollars. There's no competition and Newman can keep their price high. But, as you can see, I've come prepared, and the data is solid.

There's silence in the room. The committee members look at each other.

COMMITTEE MEMBER 2
You worked for Newman, didn't you? Until...

EZRA
Two years ago.

COMMITTEE MEMBER 2
So... Are you aware of the regulation that determines a minimum of five years period before applying for product approval in the enhancement industry?

EZRA
It’s two years.

COMMITTEE MEMBER 2
No. It's been recently updated. Maybe it’s not on the website yet. You probably understand that the enhancement industry is based on very advanced knowledge and expertise, created with billions of R&D dollars.

EZRA
There is no industry. There's just Newman.

Member 2 shrugs.

COMMITTEE MEMBER 2
A place where you worked at until only two years ago, and most likely used the knowledge you gained there in developing this product.

Ezra closes the presentation.

EZRA
If I could get my documents back.

COMMITTEE MEMBER
Application documents remain with the committee.

The committee member smiles - it's a fake, bureaucratic smile.

Ezra looks at them for a second, then jumps as fast as he can and grabs the documents from two of the members. The other two get up and try to make it to the door, but Ezra manages to get in their way.

EZRA
Give it to me.

One of them tries to run past him, but Ezra trips him, and in the commotion grabs the rest of the copies and runs out of there.

INT. EZRA'S LAB -- DAY

Josia is working on making a JELLYFISH IMPLANT. His hands are steady and precise. His phone rings - it's Ezra. Josia picks it up.

JOSIA
Hey. How did it go?

EZRA (O.S)
(breathing heavily)
I... I don't have time.

JOSIA
What's going on?

EZRA (O.S)
They don't know you were working with me. They don't have your name. Keep it like that.

JOSIA
Ezra.

EZRA (O.S)
Destroy all the equipment. You have it all in your head. Then get out of there. I love you. Take care.

JOSIA
(shouting)
Ezra.

The phone is disconnected. Josia tries to call Ezra again - reaches the voice mail. Tries again - same result.

Josia looks around at the lab for a second, then goes into action: He sits next to one of the computers, typing some commands.

A high pitch sound, like a shriek, fills the lab. Computers begin to shatter, machines break apart.

SECONDS LATER. Josia, with gloves and a mask on his face, pours some sort of ACID all over the shuttered equipment. The acid melts it all into a metallic liquid. Gas everywhere.

SECONDS LATER. Josia takes one last look at the lab, the place which was his brother's life work, the place where he saved him and gave him a new life. Then leaves.

INT. EMERGENCY ROOM -- NIGHT

Josia walks through the emergency room, peeping into every possible booth and room, trying to go unnoticed.

He's about to leave the emergency room when, throughout the turmoil, he picks up a sentence someone is saying.

FEMALE VOICE
...his implant malfunctioned...

Josia looks around, spotting the source of the sentence: He notices a FEMALE DOCTOR leading a MAN whose profession cannot be mistaken: A DETECTIVE. Josia follows them into a corridor.

SECONDS LATER

Josia follows the two through doors and corridors.

He sees them going into a room, silently goes near the door, where there is a window.

JOSIA
(whispers)
Don't let it be you.

Josia looks through the window. There's a dead body there, lying on a portable bed. He can't see it.

The Doctor and the Detective talk, then the Doctor hangs an X-RAY PICTURE on a screen to show the detective: The x-ray clearly shows the shape of their JELLYFISH IMPLANT.

Josia breaks into tears.

JOSIA
Ezra...

The Detective and the Doctor head out of the room. Josia clings to the wall so when they walk out, the door will hide him.

When they step out...

DOCTOR
When it comes to treating people with rotten implants, we have zero experience.

DETECTIVE
If you ask me, they should put down that fucking pirate asshole who did it.

They walk away.

Josia hesitates for a few seconds, then...

ROOM

He goes inside the room and slowly walks towards the body.

He pulls the blanket from over the body's head. It's Ezra all right. His body is intact.

Josia starts trembling. That old schizophrenic nervousness takes over him. He is shaking, turning and starts running for the door, then stops, resumes control of himself.

JOSIA
Oh shit. Oh shit.

Josia closes his eyes in agony, opens them, turns back to Ezra's body.

First, he takes the x-rays of Ezra's brain and shoves them into his pocket. Then he looks around in the cupboards and the drawers until he finds what he was looking for: A CHISEL.

Josia returns to the body, leans towards it, and begins to cut behind Ezra's ear, exactly where the healing scars are.

TITLE: TRANS-H

OPENING THEME: On black

"8 MONTHS LATER" INT. BANK DAY

ANDREA, 60, smiley and charming, is sitting with A BANK'S DEPUTY DIRECTOR at his open-spaced office.

The Deputy Director is going over some things on his computer.

DEPUTY DIRECTOR
I'm very pleased to serve you, Mrs. Waldman, but you needn't trouble yourself coming here personally. You could either use our app or call me directly.

ANDREA
I like to meet in person occasionally. Always good to know the people on the other side.

The Deputy Director smiles politely. She's a very big number on the bank's notes that need to be pleased. He continues his work on the computer.

Andrea looks around at the bank. Among the people waiting in line for the clerks, she notices A YOUNG MAN. Andrea focuses her eyes on him, trying to evaluate him.

DEPUTY DIRECTOR
All right. I've transferred the amount...

ANDREA
Could you please excuse me for a second?

DEPUTY DIRECTOR
Sure.

Andrea gets up, starts walking towards the young man.

When the young man sees the nice, impressive, lady coming straight towards him, he becomes nervous.

Andrea is next to him, leaning to whisper in his ear.

ANDREA
I suggest you won't do that.

The young man is very surprised, to say the least. Who the hell is this woman?

ANDREA
I know things have been hard, but you getting killed or going to jail will not really help your mother, will it, Shawn?

SHAWN
What? How do you know me? Who are you?

ANDREA
So, I suggest you just turn around, get rid of that gun and... Oh, shit, don't.

Andrea felt it coming - Shawn pushes her and draws his gun. Andrea falls on the floor. Shawn points his gun at her.

In a second everyone reacts. People start screaming, others run for the door or laying on the ground.

SHAWN
You're one of them. Are you? What? You googled me in your brain?

He points the gun to the clerk.

SHAWN
All the cash from the desks. Now.

ANDREA
Shawn. I know you believe you have nothing to lose. But I can see you're scared, which means there's a part of you that still wants to have a life.

SHAWN
Shut up.

The clerk tries to pick up the money, but she's trembling and drops the pile she collected that far.

Andrea gets up, slowly walking towards Shawn. He notices that, switches his eyes between her and the clerk.

SHAWN
Stop right now.

She doesn't, she walks to him, confident. He points the gun at her again.

SHAWN
I said stop. I will shoot you.

Andrea doesn't stop. Instead, she reaches Shawn and hugs him.

Shawn is surprised, but he doesn't reject nor explodes.

SHAWN
What are you doing?

ANDREA
Shhhh...

Shawn accepts the hug. Lays his head on Andrea's shoulder, his hands, including the one holding the gun, softly drop. He starts crying.

SHAWN
It's because of you people. Some enhanced guy took over the market. He... He lost everything.

ANDREA
I know.

The bank's SECURITY MEN want to come and grab Shawn, but Andrea concisely signals them to back off.

Andrea slowly takes the gun from Shawn's hands, handing it over to one of the security men.

MOMENTS LATER

Andrea stands with the deputy director.

DEPUTY DIRECTOR
What did you do with him?

ANDREA
I sent him home.

DEPUTY DIRECTOR
(puzzled)
But he... That's an...

ANDREA
Nothing happened.

DEPUTY DIRECTOR
I... I think...

Andrea exploits him not being sure of himself and dictates to him how to refer to the incident.

ANDREA
Just a man who got a little bit emotional but came to his senses fast enough.

DEPUTY DIRECTOR
Well, I guess so. But you...

ANDREA
(interrupts)
I am a major client of this bank.

The deputy director nods.

INT. THE MARZANO'S HOME - SOPHIA'S BEDROOM -- NIGHT

SOPHIA, 7 y/o girl, is lying in her bed, unconscious. She's connected to an INFUSION.

JOANA (35), her mother, is in the middle of replacing the infusion bag. She connects the infusion tube to the bottom of the bag and watches the liquid starts dripping down the tube.

Then she sits down on the chair next to her daughter, impatiently moves back and forth in the chair a couple of times.

JOANA
Sophia, please come back. Just the way you were. I don't need you to be something else.

Joana starts to cry.

JOANA
I'm sorry. I'm so sorry.

THE LIVING ROOM -- MOMENTS LATER

Joana steps out to the living room. Her eyes red, her face still wet from tears.

It's a simple apartment, a place of people who work hard to earn their living.

In the living room, on the sofa, sits BRAD (late 30's), Joana's husband. He's with his back to her. He's watching commercials on TV, or more accurately gazes at the TV, so he wouldn't have to think or feel, two things he really rather avoid these days.

JOANA
Did he get back to you?

BRAD
No.

JOANA
What's the last thing he wrote?

BRAD
I told you a hundred times. To give her time.

JOANA
But how long?

Brad shrugs.

JOANA
Why don't you do something?

POV, for the first time, on Brad's face. He desperately tries to contain the rage within him. But he can't, not anymore: Brad erupts, standing up, knocking the living room table while doing it.

He turns towards Joana.

BRAD
I looked and looked for this guy. Nothing. All we have is this.

Brad opens his fist - where he's holding an OLD-MODEL PHONE. He opens the messages screen and starts scrolling and reading, growing angrier with every second.

BRAD
It's three days and she's not waking up. Give her time. How long? Everyone reacts differently to the implant. You have to come. She doesn't wake up. Be patient. We have to talk to you. Just feed her with the infusion, it will be all right. Where are you son of a bitch? She probably needs more time than others. I understand what you're going through. Do you?

Brad throws the phone away. The phone hits the wall and drops to the floor. It falls apart.

JOANA
No.

Brad walks towards Joana, closes in on her, looks her in the eyes from three inches.

BRAD
Just to be clear about it, I fucking blame you.

Joana starts crying again, can't bear him looking at her like that. She rushes to the phone, sits down on the floor and tries to assemble it. Brad just stands there.

INT. CONFERENCE ROOM--DAY

A meeting is going on in the grayish, uninspiring room. The big, rectangle TABLE occupies almost the entire space, leaving not much room for the PEOPLE attending.

ALBERT (50’s) is running the meeting, listens with great care to the woman speaking.

WOMAN SPEAKING
...nearly twenty-three percent of our employees are due to a seniority increase next year, which will mean...

Sticking out in the crowd is VANESSA (13), a stunning girl, carved out from the best of a blend of origins, light blue eyes, some exotic features, Indian complexion. Vanessa is bluntly working on her very advanced CELL PHONE.

Vanessa is going over pages very fast, takes less than a second to capture every page. The screens show all kinds of charts and data, and she is sipping it all in.

Her behavior is felt. Even the woman speaking moves her eyes between Vanessa and Albert, who signals her to continue.

WOMAN SPEAKING
...an estimated one point five million dollars to our budget.

VANESSA
(interrupts)
One million three hundred and twenty-six thousand, five hundred and forty-two.

WOMAN SPEAKING
Ummm, maybe.

VANESSA
(without raising her eyes from the screen)
Not maybe.

WOMAN SPEAKING
All right. Nevertheless, we need to allocate the resources for that.

VANESSA
(again, interrupting)
That's easy.

Vanessa starts pointing at some of the people in the meeting.

VANESSA
(calmly, but decisive)
Him, her, her, him, him, and... (points to the woman speaking) you. Your combined salaries will cover the entire raise, with a hundred sixty-two thousands of change which can be referred to as R&D. In fact, according to the new strategy, their positions are unnecessary. Here. Problem solved. Anything else you need me to sort out?

The room is quiet. Many embarrassed faces are looking at Albert, whose eyes are on Vanessa, trying to figure out how to respond to her speech.

ALBERT
(gently)
Doctor Jacobs-Baer, this is not the way we want to do things.

VANESSA
I don't understand. Don't you want to clean the air?

ALBERT
Of course. We ALL do. That's our job.

VANESSA
And isn't the best way to do that is to direct every possible resource to what we know that actually works?

ALBERT
Yes, but...

VANESSA
Good. So, I guess the meeting is over.

Vanessa turns to the six "flagged" people.

VANESSA
Best of luck to you.

Vanessa gets up and starts making her way to the door.

ALBERT
Don't worry. No one is getting fired. Doctor Jacobs-Baer, we use your technology and follow your strategy, and so far, it proved successful. But ultimately, I carry full responsibility for everything, including the people who work here.

Vanessa stops and turns.

VANESSA
(disappointed)
Shit, Albert. I really thought you were ready.

Vanessa walks out of the room.

INT. ARON AND VANESSA'S HOUSE -- NIGHT

ARON (50), impressive, charismatic, the kind of man who seems to effortlessly have everything exactly in the right place, is pacing back and forth, thinking, in the kitchen in front of his TWO YOUNG ASSISTANTS. The assistants look at him as their god.

Aron stops pacing, stands in front of the assistants in a "wait for it" posture. He's used to people listening to him.

ARON
Our society is now on its journey through the valley of ambiguity, and our mission is to provide the coordinates.

One of the assistants types it into a tablet.

ARON
How is it?

WOMAN ASSISTANT
Powerful.

She wouldn't have said anything else. Vanessa enters the house.

VANESSA
I see the flock is here.

Vanessa heads straight to her room.

ARON
(to his assistants)
Keep building the case on Newman's screening process. Remember, our most important goal is to take it from their hands.

Aron smiles at them, which is all the motivation they need. He walks towards Vanessa's room.

VANESSA'S ROOM -- SECONDS LATER

Aron enters. He's overwhelmed with the loud, incomprehensibly fast music playing.

Vanessa's room is odd: wall paintings make it look like a cave. One of the walls is a SCREEN showing a live broadcast of the sun. Part of the room looks like a ROBOTICS LAB which has not been touched for quite a while, and next to Vanessa's bed there's AN HOLOGRAM POTTERY DEVICE which Vanessa is playing with, with no attention creating shapes with no real meaning or purpose, like someone else would have played with a squeeze ball to relax.

The room is a futuristic geek's dream. The Girl in it is bored.

ARON
Albert called me.

VANESSA
Didn't think otherwise.

ARON
Turn down the music.

Vanessa stops playing with the pottery, does a gesture with her hands, which a sensor picks up and stops the music entirely. She straightens up. Aron is someone she still has respect for.

ARON
It was the wrong decision.

VANESSA
Why?

ARON
Because you need to learn how to be a leader.

VANESSA
But I already designed the solution for them. Air pollution is down by 27 percent in the last four months. Albert can just keep doing the same thing and I'll go to do something else. It's a much better use of my time, anyway.

ARON
The point wasn't that you just crack it like a crossword puzzle. The point was that you'll learn how to deal with people, in the long run, to gain their trust. And regular people need more time to accept changes.

VANESSA
Regular people are useless.

ARON
(authoritative)
But they are the world. (beat, calm) I'm regular, as you know.

Vanessa doesn't answer.

ARON
I don't have to tell you that Albert will gladly take you back. (beat) We have a goal and we have a plan. Stick to it.

VANESSA
Yes, father.

MOMENTS LATER

Vanessa, completely dressed in black, quietly steps out of her room, watching from the dark hallway to the kitchen, where Aron and his assistants work.

ARON
I have to go. You can keep working here. Feel free to take anything you need from the fridge.

Aron grabs his coat, wears it while walking to the door. Vanessa goes through the darker parts of the living room, making sure the assistants won't pay attention to her and sneaks out.

EXT. THE STREET, OUTSIDE THE HOUSE -- CONTINUED

As Vanessa walks out, she watches her father in his car, talking on the phone.

She quickly sneaks outside the house's lights, watching him, and when she is sure he didn't see her she starts walking down the street, sticking to the unlit parts of the pavement, raising her JACKET'S COLLAR so she won't be spotted.

INT. ARON'S CAR -- SAME TIME

Aron is sitting in his car, just outside the house. They live in a fancy San Francisco neighborhood.

Aron opens his briefcase, protected by code, and pulls out an OLD CELL PHONE, the same as Brad & Joana have.

He turns the phone on, waits for the system to kick in, and then presses the "8", holds it for a few seconds.

The phone rings a few times, then the other side picks up.

MAN VOICE (O.S)
I'm sending the coordinates to your GPS.

Aron watches as his GPS is taken hold of from afar, and navigation instructions appear.

ARON
Got it.

Aron shuts the phone down and begins

driving. EXT. JUNIPERO SERRA PARK -- NIGHT

Aron's parks his car near the park's

entrance. The old phone rings.

ARON
Yes.

MAN VOICE (O.S)
Jump over the fence.

MOMENTS LATER

Aron tries to climb the fence. He doesn't make it, tries again, goes over the top, tries to slowly climb down on the other side but loses grip and stumbles down.

He stands up and walks through the trees.

MOMENTS LATER

Aron approaches a spot from which there's a view of the San Andreas lake.

A MAN is standing there watching the lake, his back to Aron.

ARON
Why here?

The man turns. He wears a SURGEON'S MASK, SUNGLASSES, and a HOODIE.

Some might recognize the masked man's voice - it's Josia.

JOSIA
Worst reception in San Francisco.

ARON
A little paranoid, ain't it?

Josia chuckles.

JOSIA
That won't be a first.

ARON
So, do you have details on the Newman screening process?

Josia shakes his head.

JOSIA
That's impossible. The only place this process exists is inside her head.

ARON
Who? Sierra Newman?

Josia nods.

JOSIA
There's a charade of a process, but ultimately, she decides who will be enhanced and who won't. Ten years from now, anyone who will be someone will be handpicked by her.

ARON
How do you know that?

JOSIA
Because I have the list of the people she cleared this year.

Aron is impressed.

ARON

I can use that.

JOSIA
But I need to be sure that your committee will open up the enhancement market. Newman can't remain the sole player in this game.

ARON
I'll do my best.

Josia hums, then throws an envelope in Aron's direction.

Aron picks it up and opens it. There's a list of names, but also some pictures of Aron and his male assistant in a very intimate situation.

Aron looks at Josia with surprise.

ARON
Am I supposed to be afraid of this?

JOSIA
Yeah, well, I know it's consensual, and personally, I even find it lovely, however, he was your student when those were taken, which is somewhat illegal. And he was not the only one, right?

ARON
Why are you doing this?

JOSIA
I think your real goal is to take control of the clearing process...

ARON
I seek transparency for such crucial...

Josia raises his hand to halt Aron. Aron is sullen. He's not used to being shut up like that.

JOSIA
And as I said I need to be sure that you will level the field. So, I'm just making sure we're on the same side.

Aron thinks for a few seconds, then nods - yes.

ARON
These pictures are from before you and I started... Working together.

JOSIA
I knew who to hack.

Aron is worried. This means those pictures are traveling.

ARON
Who?

JOSIA
Maybe later. For the moment, they can't use it.

EXT. ENTRANCE TO A FALLOUT SHELTER -- NIGHT

Vanessa gets off a taxi, starts to look around. She walks down the quiet, almost deserted street of an industrial area.

She arrives at a door with an atomic shelter sign: "FALLOUT SHELTER". She takes out her phone, opens the camera and looks at the door through the screen.

Only on her screen, she sees an AUGMENTED REALITY GRAFFITI: "THE FIFTH COLUMN".

Vanessa walks up to the door and knocks on

it. A few seconds waiting, and the door

opens.

An ELDERLY MAN (round 70) stands at the door, looking at her without saying anything.

VANESSA
I'm here for the club.

The man examines her carefully.

DOORMAN
A member sent you an invitation?

VANESSA
No. I hacked your website.

The doorman examines her for a few more seconds.

DOORMAN
Good enough for me.

He opens the door and Vanessa enters.

INT. THE FIFTH COLUMN HALLWAY -- CONTINUED

The entrance looks banal: narrow, bare cement walls. A weak hanging lightbulb hardly lights the place.

VANESSA
You're the doorman?

DOORMAN
Yes.

VANESSA
You're not enhanced.

DOORMAN
No. Since it's your first time here, how 'bout I'll show you the ropes?

VANESSA
I expected something else.

The doorman pulls some sort of an ELECTRONIC GUN, resembling a barcode reader, quickly points it to Vanessa's head and presses the trigger.

Vanessa's eyes narrow as the information hits her brain.

DOORMAN
That's the map of the place.

VANESSA
(alarmed)
But the implant can't be penetrated without permission.

The doorman raises his pointing finger to his mouth - SHHHH.

DOORMAN
Mind browsing is disabled to keep the privacy of the members, like you now. Your phone.

The doorman reaches his hand. Vannessa gives him her phone.

DOORMAN
For security reasons, every day the entrance changes. just hack us again.

All of a sudden, Vanessa seems hesitant.

DOORMAN
With the map, you oughta know where's the way in.

The doorman sits back in his chair, not minding Vanessa.

She looks around, fixates on one of the walls, walks towards it. When her nose almost touches the wall, she turns to her left and sees the stairway down.

FIFTH COLUMN - BRANCHING ROOM -- MOMENTS LATER

Vanessa walks out of the stairs to another hallway with several gates leading to different parts of the club.

Few PEOPLE walk by her, some alone, some in pairs. Music is heard from one of the directions.

Vanessa chooses a direction.

FIFTH COLUMN - PHONE BOOTH ROOM -- SECONDS LATER

Vanessa enters a room full of VINTAGE PHONE BOOTHS. She starts strolling along with the booths, watching the variety of people inhabiting the booths - different colors, ages and origins.

The people are wearing a HEADSET, which covers the ears and the area of the implant. They all stand with their faces to the SCREENS which hangs where the phone itself supposed to be.

Vanessa finds a free booth and enters it.

On the screen: "PUT THE HEADSET ON". Vanessa complies. A menu appears: "CHOOSE YOUR EXPERIENCE". Different categories show up. Vanessa picks "SEX", which leads to a menu of different sexual experiences. Vanessa presses "RAPE" but gets a banning message: "THERE'S AN AGE RESTRICTION".

Vanessa now goes to the "DEATH" menu, and chooses "VIOLENT DEATHS", and again - banned from entering.

Next pick: "FALLS". Vanessa chooses "FALLING FROM SPACE". This time it works.

The screen says: "PLEASE CLOSE YOUR EYES". Vanessa does so.

Her face shows that the experience begins, and she slightly loses her balance, but after the initial adjustment the same old' boring face she wears lately takes over.

The experience lasts several seconds, after which she takes off the headset and leaves the booth.

FIFTH COLUMN - MUSIC ARENA -- SECONDS LATER

Vanessa walks into the biggest hall of the club. A BAND is playing on the stage a piece which sounds like several different songs playing at once.

The AUDIENCE is small, everyone listens privately. Vanessa focuses her attention on the stage.

A POV on Vanessa from the back of the club gives the impression that someone watches her.

The song ends abruptly, with no warning. The band members look at each other and start playing the next song - an extremely fast song that sounds like squeezing something by Pink Floyd into 10 seconds.

The song has a great impact on some of the people in the audience and they shout out of joy and energy.

Vanessa smiles too, she liked it.

THE BAND LEADER
Our last song is a classic.

They start playing again. At first, it sounds like one very long, stressful note, but after a while, the note slightly changes and underneath it, hardly noticeable, there are complex harmonies. Vanessa closes her eyes, letting her body get wrapped by the music. Finally, she gets a taste of what she came for.

SECONDS LATER

The song ends. Vanessa opens her eyes. The band gets off the stage.

ANDREA
(O.S)
I'm glad you got some relief.

Vanessa turns and sees Andrea, standing right next to her.

ANDREA
Come sit with me.

Andrea turns and starts walking. Vanessa thinks for a second. Should she accept that invitation from this 60 y/o woman? She makes her decision and follows Andrea.

SECONDS LATER

Andrea and Vanessa are sitting on big soft CUSHION SOFAS.

Andrea is glaring at Vanessa, who starts to feel uncomfortable but tries to hide it.

VANESSA
I thought they don't enhance old people.

Andrea doesn't answer, just keeps glaring, tilts her head a little, focusing on Vanessa even more. Now Vanessa can't pretend she's not bothered.

VANESSA
I think I have to go.

ANDREA
You're Aron Jacobs' daughter.

VANESSA
Isn't mind browsing blocked in here?

ANDREA
They don't shut the brain.

Vanessa thinks for 2-3 seconds.

VANESSA
So, you're one of the Newman's elderly trials?

Andrea reaches her hand.

ANDREA
Andrea Waldman.

Vanessa shakes her hand.

VANESSA
Vanessa. (beat) I thought those trials were a failure.

ANDREA
Finished Harvard med first in my class when I was fifty-eight. And I wasn't the only enhanced there. So probably not such a failure.

VANESSA
But after the trials, they set the age limit.

ANDREA
Right.

VANESSA
Why?

ANDREA
You're a smart girl, by definition. Surely you can make a good guess.

The two are quiet for a while. Vanessa looks around, checking the darkroom. Andrea keeps reading Vanessa, it's the same look she had when she "read" Shawn, the bank robber.

VANESSA
Glad you found some relief?

Andrea sighs.

ANDREA
Took you a while.

VANESSA
What did you mean by that?

ANDREA
It was a slip of the tongue.

VANESSA
No, it wasn't.

Andrea just looks at Vanessa. Vanessa suddenly understands, catches her breath.

VANESSA
What? Do you have a mind-reading enhancement? But... But... Newman doesn't...

Vanessa realizes something else.

VANESSA
(excited)
Shit. Shit. You went pirate. You have a second implant.

Andrea turns her head to show her left side, pulls her hair and shows Vanessa the cut behind her left ear.

ANDREA
I'm still practicing it (beat). It's not mind reading, it's an empathy enhancement. And it's F-U-N. Regular people are so easy to read... Needed more of a challenge.

Vanessa points to herself with a question mark. Andrea nods.

VANESSA
Aren't you afraid of the Pattel barrier?

ANDREA
I don’t think there's a barrier. The human brain can accept all the enhancement it can get. Newman invented the Pattel barrier for political reasons. Sierra Newman herself has two implants. You probably know her, don't you?
Vanessa nods - she does.

VANESSA
How do you know I won't rat you out?

ANDREA
Does Aron Jacobs know you're here?

VANESSA
No point in lying to you.

Andrea laughs, then glares at Vanessa again. Vanessa is now more at ease with the glaring, poses silly emotional faces to Andrea - frightened, cheerful, bored.

ANDREA
That's the one.

Vanessa becomes serious. Andrea nailed it.

ANDREA
There's something we can do about it.

Andrea gets up. Vanessa looks at her, hesitant.

ANDREA
Don't worry, or should I say don't get your hopes up? it's nothing sexual. Better.

Vanessa gets up.

EXT. OUTSIDE THE BANK -- NIGHT

Andrea and Vanessa get out of a taxi. They're across the street from the BANK that Andrea stopped the robbery.

Vanessa is still clueless, looks around as the taxi leaves, then looks at Andrea.

Andrea points to the bank.

ANDREA
There are six million dollars in cash in the safes right now.

Vanessa's about to say, "Are you crazy?", but holds herself and thinks about it for a second.

VANESSA
You've fucking done this before.

Andrea shakes her head.

VANESSA
Was it wise to come here by cab?

ANDREA
I don't like driving.

Andrea pulls two STOCKING CAPS from the inside of her coat, gives one to Vanessa and wears the other one.

VANESSA
What? You always carry spare caps with you in case you'll find a robbing mate?

Andrea pulls out a few more from her coat and shows Vanessa.

ANDREA
They tear up easily.

Vanessa wears hers. They start crossing the

street. SECONDS LATER

Near the bank's door, Andrea gives her PHONE, with a WIRE attached to it and a SMALL SCREWDRIVER, to Vanessa.

ANDREA
After the entrance, there's a wing to the right. Behind the last cubicle, the deputy director's office, there's a small box on the wall. That's the security center. After I'll open the doors...

Andrea points to the TWO DOORS, the exterior and an interior one.

ANDREA
(continued)
You'll have thirty seconds to run to the box and shut the security systems down.

VANESSA
You said you've done this before?

ANDREA
Yes.

VANESSA
I just browsed bank security systems. If it shuts at closing hours, then it registers at a dispatch somewhere and they know something is going on.

While Vanessa's speaking, Andrea pulls out a PASSKEY and opens the first door.

INT. BANK -- CONTINUED

ANDREA
Very good, Vanessa. So, what should you do?

VANESSA
The trick is to think that nothing happens.
Exactly.

VANESSA
But there are too many things I don't know about the system. The chance I'll get the code right in time is twenty percent.

Andrea opens the second door and starts a TIMER on her WATCH.

ANDREA
I told you we can do something with your boredom.

Vanessa starts running as fast as she can, turning right to the dark inner wing of the bank, examining the cubicles, spots the "DEPUTY DIRECTOR" sign, runs and jumps over his table, falls and bangs against the chair and the wall, gets up, goes to the box, opens it, opens the PANEL very fast with the screwdriver, the screwdriver falls from the haste.

VANESSA
Shit.

Vanessa picks it up and opens the screws, connects the wire to the bare wire behind the panel and pushes something on the phone's screen.

VANESSA
Come on. The old woman does it.

In the meanwhile, Andrea walks calmly through the bank.

The software she was waiting for finally comes up. She breaths rapidly as she works on the phone, running several coding decryptors on separate windows.

One of the codes works.

VANESSA
Wow. I did it.

Andrea looks at her watch. The timer says "00:32". Vanessa keeps working on the phone as...

A phone rings.

Vanessa raises her head.

VANESSA
Does that mean?

ANDREA
Yes.

VANESSA
Shit. We got to get out of here.

ANDREA
No. It will mean we failed.

VANESSA
But they're going to come.

ANDREA
Not necessarily. They just got an indication that maybe someone entered the bank and didn't put off the alarm on time. These falses happen a lot. If the controller wasn't looking exactly on the screen on the two seconds you were late to put up the fake signal, then he can't tell something's going on.

The phone ring stops.

VANESSA
How will we know if he wasn't looking?

Andrea shrugs - they won't.

SECONDS LATER

Andrea presses the code combination to the BIG SAFE. It's correct.

Vanessa gives her a "how did you?" Look.

ANDREA
I'm a client here.

THE BANK'S SAFE - CONTINUED

They walk into the safe.

Andrea hands the passkey to Vanessa.

ANDREA
Want to give it a try?

Vanessa takes the passkey, goes to one of the SAFE DRAWERS, looks at it, examines it.

VANESSA
There are led and steel in the walls. I can't connect.

ANDREA
Good. So you can't stream a 'how to crack a safe' video. You'll have to figure it out like a regular human thief. Well, perhaps a little faster.

Vanessa smiles and start working on a drawer’s lock.

MOMENTS LATER

Most of the drawers are open. Vanessa opens the last one.

VANESSA
Yes.

She's happy, joyfully skips between the open drawers and takes out the money in them. She acts more like a 7-year-old, not the 13-year-old enhanced Doctor of Civil Engineering she is.

When she emptied the drawers...

VANESSA
Six million, two hundred and twelve thousand, four hundred and sixty. Left the pennies.

ANDREA
That's cool, Vanessa. (beat) now put it back.

VANESSA
What?

ANDREA
You're short on money?

VANESSA
No...

ANDREA
So, there's no reason to take money which kind of belongs to hard-working people. Do you remember how much was at every drawer?

VANESSA
You're nuts, you know? That's why they ban enhancing over forty now? Cause they saw it's making you crazy?

Vanessa sighs but starts returning the money to the drawers.

Andrea examines her while she does it, "reads" her and smiles.

ANDREA
You're welcome, kid.

INT. THE MARZANO'S HOME - SOPHIA'S BEDROOM -- DAY

Sophia lies in her bed. Joana is sleeping in the chair next to her. Suddenly Sophia starts squirming. She squirms so hard that the INFUSION NEEDLE moves and scratches her arm. Blood starts running from the wound.

Joana opens her eyes, at first out of sleep, but when she grasps what's going on with Sophia she awakens completely, panicking.

JOANA
Sophie.

Joana leans over to her, doesn't know what to do, caresses her and tries to hold her.

JOANA
(screaming)
Brad.

INT. EMERGENCY ROOM -- DAY

CUT TO:

Brad runs into the emergency room, holding Sophia in his arms.

Her arm is wrapped with a BANDAGE, red from blood, clearly done by an amateur.

Joana comes rushing in a few seconds

later. TREATMENT ROOM -- MOMENTS LATER

The Female Doctor (who we've seen before, with Ezra) injects a shot to the still trembling Sophia.

This is the same room where Ezra was.

Brad, fury in his eyes, and the anxious Joana stand on opposite sides of the bed.

JOANA
What's wrong with her?

DOCTOR
It looks like her brain is stroking.

Her answer makes Joana even more anxious. The doctor continues examining Sophia.

DOCTOR
It's rare that people come here with implant complications. Why didn't you go straight to Newman's clinic?

Joana is overwhelmed with shame. Brad stares right at Joana, waiting for her to tell the truth. When she doesn't...

BRAD
It's not from Newman.

The doctor looks at them, then at Sophia, concerned, and back at them.

DOCTOR
Oh. (beat) So I assume her medical insurance won't cover the necessary tests and the treatment.

BRAD
No.

DOCTOR
I have to tell you that aside from the hospitalization charge every test, like the scan I want to give her is with additional cost.

BRAD
Yeah. Whatever's necessary.

The doctor nods for understanding and resumes examining Sophia.

WAITING ROOM -- MOMENTS LATER

Brad and Joana are sitting in a small waiting room. They can't look at each other. Joana wants to say something, finds it hard to gather the courage, and then:

JOANA
We don't have the money, right?

BRAD
No.

TREATMENT ROOM -- MOMENTS LATER

The doctor, Joana, and Brad are looking at the SCAN IMAGE. It shows the JELLYFISH IMPLANT supplementing Sophia's brain.

DOCTOR
That's the second time I see an implant like that. A few months ago, a man died because of it.

Joana starts crying.

DOCTOR
(contemplating)
But she responds to it very differently.

BRAD
Can you remove it?

The doctor shakes her head.

DOCTOR
We can only monitor and try to deal with the symptoms. Maybe at Newman, they have more expertise at this, but if it's not their implant... (beat) well.

The doctor does an "I'm sorry but I have to go" face and leaves the room.

BRAD
Ok. Nothing to do here.

JOANA
I'm staying.

Brad doesn't answer, waits a few more seconds, then leaves.

Joana stays with Sophia. With trembling hands, she takes out the shuttered screen OLD-MODEL PHONE, tries to turn it on. It doesn't turn on.

Joana now takes her own PHONE, which triggers a flashback:

INT. THE MARZANO'S HOME - LIVING ROOM -- DAY

Sophia practices the VIOLIN. She's terrible.

Joana tries to work on her LAPTOP. She can't concentrate, Sophia's practice really disturbs her.

JOANA
(bursts)

Enough.

Sophia stops practicing.

SOPHIA
But mom, you said I need to practice more.

Joana leans back and sighs. She forces herself to be gentler.

JOANA
Go practice in your room, all right?

Sophia gets up and walks to her room. Joana's phone rings.

JOANA
Yes.

MAN VOICE (O.S)
You left your details as an answer to my pop up add. just enhancement.

Joana straightens up, touches her hair as if to arrange herself - this is an important call.

JOANA
Yes, I did.

MAN VOICE (O.S)
Before we'll go over the details, I need to understand the reasons you want to get enhanced.

Joana hears Sophia resumes her practice in her room.

JOANA
It's for my daughter.

A few silent seconds.

JOANA
Hello?

MAN VOICE (O.S)
How old is your daughter?

JOANA
Seven. (beat) is that a problem?

MAN VOICE (O.S)
It shouldn't be. In fact, in many ways, the procedure is even simpler, and the long-term effects are much more powerful.

JOANA
Yes. I heard it at Newman.

MAN VOICE (O.S)
You went to Newman?

JOANA
(apologetic)
Yes. But we can't pay three million dollars. Not even close to that.

MAN VOICE (O.S)
You decide how much to pay me. According to your abilities and what it's worth to you.

JOANA
Really?

MAN VOICE (O.S)
Look, I'm not doing it for the money. I believe enhancement shouldn't be the privilege of the rich. Everyone is entitled to a fair opportunity. (beat) But I'll be honest with you. I haven't performed an enhancement on someone that young, so I can't tell you exactly how the adjustment process will go. It could be longer and more complicated than in other cases.

JOANA
Is there a risk?

MAN VOICE (O.S)
Every operation has risks. This one is no different.

Joana nods for understanding as if he can see her.

JOANA
Aha.

MAN VOICE (O.S)
The problem is that you make the decision for your daughter. So, I need to know why.

Joana moves a little in her chair, preparing herself for a speech.

JOANA
Sophia, that’s her name, is sweet. She's really the sweetest, easiest girl. Never argues, always helpful. But I can already see she doesn't stand a chance. (beat) There's this kid who was in her class, he's still in her violin class. His parents have the resources and they had him enhanced, and he's just perfect. He skipped to high school already, won a big science prize and he plays...
(takes a deep breath) very beautifully. (beat) And Sophia, everything comes so hard for her. How will she be when she grows up? How could she stand with someone like him? And many others? She will be... What? Their slave? At first, I thought that this kid's parents should be ashamed, that it's like cheating, but when I heard him play, I got it. That's the way things are and going to be. And I don't want her to be left behind.

CUT TO:

TREATMENT ROOM

End of flashback.

Joana takes a long look at the sedated, sleeping, Sophia, then scrolls her contacts, gets to "LIZ - INSURANCE" and calls her.

INT. THE MARZANO'S HOME - THE STAIRWAY -- DAY

Josia, wearing a surgeon's mask, a hoodie, and sunglasses, stands in the stairway outside Joana and Brad's apartment. He rings the doorbell.

After a few seconds, he repeats.

SOMEONE walks down the stairway, passes him. Josia looks away so his face won’t be seen.

Josia rings the bell once more, then takes out his phone and scrolls the correspondence chain between him and the Marzanos.

After the last correspondence, which Brad read aloud, there are a few unanswered questions from him: "HOW IS SHE?", "DID SHE WAKE UP?", "UPDATE ME". Josia writes another one: "CAME BY YOUR PLACE. DROPPED A SUPPLY OF INFUSION. HOW IS SOPHIA?".

Josia puts down a FOOD CONSERVANCY CONTAINER near their door.

EXT. OUTSIDE NEWMAN'S CLINIC -- DAY

Brad parks in front of the impressive, futuristic-looking clinic. A modest "NEWMAN BIOTECH" sign tastefully blends with the architecture.

Close to the entrance stand a group of PROTESTORS, holding anti-enhancement signs and dressed like NEANDERTHALS.

Brad, red swollen eyes, walks directly through the protestors towards the entrance.

Some protestors surround him.

PROTESTORS
Don't do it, man. Enhancement will destroy us.

One of the protestors, a PRIEST (35), the leader of the demonstrators, comes very close to him, accompanies Brad who walks to the entrance.

PRIEST
Brother. enhancement in unholy.

The priest shoves some BROCHURE into Brad's coat pocket. This makes Brad stop for a second. Brad looks at the priest.

PRIEST
Read this brother. There are other ways to fill the void. Man should not try to become god.

Brad continues to the entrance.

INT. NEWMAN'S CLINIC -- SECONDS LATER

Brad walks through the metal detector. Beep.

He walks back, impatiently empties his pockets, gives the SECURITY WOMAN his wallet and keys, sticks the brochure back to his pocket, then walks through the metal detector again. This time it's OK.

NEWMAN'S RECEPTION -- SECONDS LATER

Brad faces the RECEPTIONIST, who looks something up on her computer.

RECEPTIONIST
Yes. It says you were here but only had an inquiry session.

BRAD
I know. I know exactly what we did here. My daughter is unconscious and I'm asking that you help her.

RECEPTIONIST
What's that got to do with Newman?

BRAD
She has an implant.

RECEPTIONIST
No. It's not written.

Brad holds himself from snapping.

BRAD
I know. It's not yours. We took her to a pirate enhancer. But she won't wake up. She... She...
Brad can't hold the tears.

BRAD
You are the only ones who might know how to treat her. I will pay. Just help her. Please.

The receptionist looks at him, nods.

RECEPTIONIST
I will transfer it.

BRAD
Thank you.

RECEPTIONIST
Good luck.

INT. UNIVERSITY BUILDING - HALLWAY -- DAY

SIERRA NEWMAN (45), black, impressive, calm, is sitting on a bench in the hallway. She's reading documents on her TABLET, very fast - she's enhanced.

MARIA (30), a Latin woman, walks up to her.

MARIA
Miss Newman.

SIERRA
Yes, Maria.

MARIA
A man came into our clinic just a few minutes ago. His daughter had a pirate implant and she's unconscious. He asked if we could help.

SIERRA
Good thing you told me now.

MARIA
Of course. I know what you'd like to do. You want me to take care of it?

SIERRA
No. I'll talk to them.

Aron, accompanied by his assistants, walks in the hallway, approaching Sierra, smiling.

ARON
Hello Sierra.

SIERRA
Senator Jacobs.

ARON
Big day.

SIERRA
It depends on how it goes. How will it go?

Aron turns to his assistants.

ARON
Make sure the room is ready.

The assistants leave. Maria excuses herself with a gesture and goes. Aron sits next to Sierra.

ARON
The committee needs to prove
It gives room to all the
sides.

SIERRA
And on which side are you, Aron?

ARON
You should know that.

Aron gets up.

SIERRA
I'm watching Vanessa's
accomplishment. I think that much
of it is her, not the implant.

ARON
Yes. I'm very proud of her.

SIERRA
But smart as she is, maybe
she's still too young to allow
her to hang out at the fifth
column.

Aron, of course, had no idea.

SIERRA
She should know that the club
has no obligation for
confidentiality from parents
when the guest is under
eighteen.

ARON
Meet you inside, Sierra.

INT. UNIVERSITY BUILDING - SEMINAR ROOM -- DAY

Many DISTINGUISHED PEOPLE are sitting around a BIG TABLE in a luxurious, modern, bright and colorful seminar room.

A SMALL CAMERA is filming the meeting, and there's a BIG SCREEN which shows, like in a musical reality show, hundreds of faces of PEOPLE who watch the stream. Comments from the viewers float on the screen.

In front of the participants, there are MICROPHONES.

ARON
The world is changing. Humanity is changing, and the law system doesn't keep up. I'm honored to chair this committee for the legislation of enhancement related affairs. Our society is now on its journey through the valley of ambiguity, and our mission is to provide the coordinates. (beat) All right, we have a bundle of issues to sort out.

RUTH BINDER (40), wearing a huge, colorful striped, hipster-looking dress, interrupts.

RUTH
Actually, we only have one issue to discuss. The banning of enhancement.

Some of the participants clap their hands, and "thumbs up", along with other supporting comments, appear on the screen. Ruth is pleased. She struck first.

ARON
Ruth, the agenda has been arranged. You had your chance to respond to it, and didn't, and now you're throwing cheap shots.

RUTH
The agenda sucks. Tens of thousands of people lost their jobs by now because of enhanced people. And that's just the beginning. If we won't stop this now, I'm afraid of what we'll become of us.

SOME OTHER PARTICIPANT
But there are many enhanced people already. What do you suggest doing with them? Kill them?

RUTH
Restrict their power. Deny them from running to public positions and from owning a business.

The room swarms.

SIERRA
(overcoming the noise)
How is your son, congresswoman Binder?

Ruth points at Sierra.

RUTH
She shouldn't be allowed to join this committee. It's like letting the cat guard the cream.

SIERRA
Has your son fully recovered from the accident?

The room quiets down. Nasty comments, like "SHUT THAT BITCH UP", appear on the screen.

SIERRA
You know that without the spinal regenerator he wouldn't be able to walk today. The spinal regenerator was developed by Doctor Andrea Waldman, who's enhanced. Medical technologies that save millions of lives would have taken many more generations without the work of enhanced people.

Some favorable comments, like "IT'S TRUE. MY SON'S LIFE WAS SAVED BY AN ENHANCED DOCTOR" show up.

SIERRA
The people of San Francisco and soon many other places in the world can breathe clean air for the first time in years, thanks to the unusually fast work of

Doctor Vanessa Jacobs-Baer, an enhanced scientist.

Sierra looks at Aron - she "marked" him.

SIERRA
And that's just the tip of it, and much more will come. Enhancement will make the life of everyone better in ways we can't even imagine.

Aron tries to take control of the meeting.

ARON
We can all agree that enhancement has done many good things for mankind. Yet the strong emotions around it are legitimate. (beat) this only goes to show the extent of our responsibility. I would like to bring up the issue of the heavy regulation of new enhancement initiatives.

SIERRA
You mean pirate enhancing.

ARON
I mean creating conditions for competition which will make enhancement better and affordable.

SIERRA
There's a seven-year-old girl who lies unconscious in UCSF, after having a pirate implant. There's no saying if she'll ever wake up. Medical insurance doesn't cover her. So, who is responsible for her? There are already people who died after pirate enhancement, and for some reason, it is still not illegal. I hereby swear that I will do whatever I can to fight pirate enhancement and expect this committee to draw the lines in whatever harms people, not what benefits them.

INT. HOSPITAL - TREATMENT ROOM -- DAY

Sophia starts squirming again. Joana walks up to her.

JOANA
Hang on, love. I'll call the doctor.

MOMENTS LATER

The doctor sedates Sophia, who slowly calms down.

JOANA
Does she feel anything?

The doctor makes a big sigh.

DOCTOR
I don't know. I can't even tell if it's better that she feels or not.

Joana walks to Sophia, caresses her face.

DOCTOR
You need to go to the office, sort out the payment, or we won't be able to have her here any longer.

Joana turns her head to the doctor and nods - she'll do that.

The doctor leaves.

Joana leans over Sophia and kisses her.

HOSPITAL - ADMINISTRATIVE OFFICE -- MOMENTS LATER

Joana examines the hospital bill. It's big. She signs it.

EXT. OUTSIDE THE HOSPITAL -- MOMENTS LATER

Joana is standing on the verge of a very busy road outside the hospital. She didn't sleep, been crying, worried about the money they don't have, afraid for Sophia, haunted by guilt, and it all lies on her right now.

Joana looks at the cars passing, going very fast. She sees a TRUCK approaching, breaths heavily and goes down to the road, exactly at the right moment to get hit by the truck.

INT. EMERGENCY ROOM -- DAY

Brad walks slowly, unwillingly, through the emergency room, not minding the turmoil around him. He's a beaten man.

TREATMENT ROOM -- MOMENTS LATER

Brad, the doctor and a NURSE (B) are in the treatment room with Sophia.

The nurse is unplugging Sophia, preparing her to go.

DOCTOR
(hesitantly)
Do... Do you want to see her?

Brad gazes at Sophia. She's on him now, solo.

BRAD
No.

NURSE B
She'll be ready in a short while. I'll arrange for some extra fusion bags.

The nurse gives the stunned Brad a sad smile and walks out.

DOCTOR
I'm so sorry.

The doctor leaves. Brad is alone in the room with Sophia, trying to figure out what to do but can't figure it out.

Then:

SIERRA (O.S)
Mr. Marzano?

Brad doesn't turn.

BRAD
I don't have it right now.

SIERRA (O.S)
My name is Sierra Newman.

Brad turns around, surprised, sees Sierra.

SIERRA
You came to us this morning, asking for help.

Sierra walks in and approaches Sophia.

SIERRA
She's lovely. (beat) I heard about your wife. I'm so sorry.

Brad chuckles. It's bitter.

BRAD
We're broke. Joana thought I will get her life insurance money, for the hospital bills. (beat) That stupid woman. They have a specialist, an enhanced guy. Took him thirty seconds to analyze the "accident" and find out she called for her policy papers just an hour before.

SIERRA
I will help you, Mr. Marzano.

BRAD
Didn't you get it? I can't pay for it.

SIERRA
You don't have to. We'll take Sophia to our clinic and see what we can do. I'll cover the hospital bills as well.

BRAD
Why would you do that?

Sierra looks at Sophia.

SIERRA
I feel somewhat responsible.

BRAD
How come?

SIERRA
I started the whole enhancement thing. If I hadn’t, you wouldn't have the need to do the pirate implant for Sophia. (beat) I can't bear the thought of what happened to her and do nothing. (beat) do you agree that we will take care of her?

Of course he does.

INT. NEWMAN'S CLINIC - MARIA'S OFFICE -- DAY

Brad is sitting in a shining white office.

Maria enters the room, sits in the manager's chair - that's her office.

MARIA
Mr. Marzano. My name is Maria Kaplan. I'm head of security for Newman biotech. Please tell me everything you know about who gave the implant to Sophia.

BRAD
I don't know much. He covered his face with a mask and sunglasses.

MARIA
How old would you say he is?

BRAD
I don't know. Young. Twenty-something, thirty.

MARIA
How did you reach him?

Brad sighs heavily.

BRAD
Joana did that. She left her details at a pop-up ad.

MARIA
An ad like this one?

Maria shows Brad her TABLET, with an ad for "JUST ENHANCEMENT".

BRAD
I guess.

MARIA
Where did he do the operation?

BRAD
In Sophia's room. He covered it with nylon sheets.

MARIA
Did he do it alone?

BRAD
No. There was someone else. I think it was a woman, but I can't be sure. She covered herself like he did.

MARIA
So why do you think it was a woman?

BRAD
She was shorter. Thinner.

MARIA
And after the surgery, were you in contact with him?

BRAD
He gave us a phone so we could update him.

This detail is important for Maria.

MARIA
And where is this phone?

Brad shrugs.

BRAD
I think Joana had it.

MARIA
Could you get us this phone?

BRAD
I don't know.

MARIA
It's important. We want to get this guy. Could it have been on your wife at the time of the accident?

BRAD
Maybe.

MARIA
All right. If it was, I'll need you to demand it from the police and bring it to me. (beat) that's it. you're free to go.

BRAD
What about...

MARIA
You'll get an update on her every day.

Brad nods. He takes his time, not sure if it's appropriate of him to just get up and go, and after a few seconds does exactly that.

EXT. OUTSIDE NEWMAN'S CLINIC -- DAY

When Brad walks out of the clinic, he enters a violent clash between NEWMAN'S SECURITY PEOPLE, who push the PROTESTORS away from the entrance.

He stops and watches the action.

The priest holds high a picture of Sierra Newman, shaped like Hitler. Two of the security men are hitting him, but he doesn't react.

INT. THE MARZANO'S HOME - LIVING ROOM -- DAY

Brad sits in the living room, watches the news. There's a piece about the demonstration outside the Newman clinic. The priest - FATHER JOHN MORROW - is interviewed.

REPORTER
Father, Newman claims that you comparing Miss Newman to Hitler was a violent breach of every freedom of speech limit.

Father Morrow smiles.

FATHER MORROW
Whenever a group of people believed they are better than others or tried to take god's place, the result was a mass annihilation. Maybe they're right, maybe the comparison is not accurate, enhancement is probably worst than anything Hitler has done.

Brad notices the BROCHURE he got from Father Morrow, lying on the floor beneath his COAT. He picks it up and goes over it, staring at the phone number.

INT. NEWMAN'S CLINIC - TREATMENT ROOM -- NIGHT

Maria enters the room, where Sophia is kept. Sierra is there, aiming a STATE-OF-THE-ART SCANNING DEVICE to Sophia's head.

MARIA
How is she?

SIERRA
Salvageable. (beat) the hospital has no clue. All the drugs they gave her mess with the adjustment.

The two waits as Sierra completes the procedure of scanning, and the image of Sophia's brain emerges on the screen.

Sierra starts manipulating the image, zooms in on the implant, magnifies, turns around, "snips" the image from the rest of Sophia's brain. Now they can see the JELLYFISH IMPLANT sketched on the screen.

Sierra catches her breath, then touches the image of the implant on the screen with admiration.

MARIA
It's not a copy of ours like most pirates try to do.

SIERRA
No. It's something new. (beat) There are only two people who could make something like that. (beat) Indira Pattel is one, but I'm sure it's not her. The second one is Ezra Zainer. MARIA
Isn't he dead?

SIERRA
Yes, he is. And somehow the implant he had was cut off.

MARIA
I'm on it.

Maria turns and walks away.

Sierra approaches Sophia, starts stroking her hair.

SIERRA
There are some secrets in that head of yours. (beat) I really hope I'll be able to learn them all without harming you.

INT. CHURCH -- NIGHT

Brad walks into a church. There are PEOPLE there, but it's not a mass. Some are sitting in a circle in the front of the church and some on the front benches. Congresswoman Binder is there, and father Morrow is sitting next to her.

One of the people in the group is speaking.

PARTICIPANT
The committee is bullshit. Senator Jacobs' daughter is enhanced.

RUTH
I won't lie to you. I don't believe it will ban enhancement, but our voice will be heard, and all this Hitler talk is not helpful.

They notice Brad.

Father Morrow makes an inviting gesture to him.

FATHER MORROW
I'm happy to see you here.

Brad makes his way to the front of the church. Coming closer it's visible that the group is a mixture of people who you'd expect to see in church and others who look like radical left-wing activists, who probably came with congresswoman Binder.

FATHER MORROW
You are Brad Marzano, right?

Brad is already next to them. He doesn't answer. The people

nod at Brad, sympathizing with him.

FATHER MORROW
Come, Brad. Sit with us. Everyone here suffered from enhancement one way or the other or share the fear of what it will make of us.

Some people on the front bench move a little to make room for Brad. He sits there.

FATHER MORROW
Ruth. Have you heard about the frog experiment?

RUTH

No.

FATHER MORROW
When you put a frog in plain water, everything is fine. A frog is an amphibious creature.

RUTH
Isn't it my role to represent science in this room, father?

Some chuckle.

FATHER MORROW
But then you start to heat the water up. The frog doesn't feel the change. You heat it some more, it still doesn't feel that anything is different, and the water becomes hotter and hotter, and before it senses anything, the poor frog is already dead, burnt in boiling water.

There's silence in the room. They get the metaphor.

RUTH
So, you're saying we need to pull the frog out?

FATHER MORROW
No. (beat) we have to do whatever we can to stop the water from heating. (beat) Whatever we can, no matter what it takes.

The participants of the meeting make consenting voices. Ruth's face show - she knows he's right.

INT. NEWMAN'S CLINIC - MARIA'S OFFICE -- NIGHT

Maria works on her computer. Next to it is the BROKEN PHONE, attached by a cable to the computer.

Maria is a wizard on the computer, running many screens real fast, crossing data from many sources.

Then she gets where she wanted - she presses a key and the screen shows JOSIA.

He looks awful in this picture - that's his psychiatric hospital record.

Zoom in - the file indicates that Josia has been released to the care of his brother - Ezra Zainer.

INT. NEWMAN'S CLINIC - TREATMENT ROOM -- NIGHT

The POV comes closer and closer to Sophia's face until it can't go any further without... going inside into her brain.

CUT TO:

INT. DREAMWORLD -- SURREAL TIME

Sophia stands and looks around her. She's in a weird place: a TREE grows out of the floor. On the tree there's a STRANGE CREATURE, with a very long female body but a masculine head, eyes shut. The creature is sitting on the tree, but his extremely long four arms are holding and playing A VIOLIN MADE OF LIQUID. There's no sound, though.

A HORSE is frantically running around in circles - but he's far enough so he won't hurt Sophia.

The whole place looks like a Salvador Dali painting.

MASKED MAN (O.S)
What do you want, little girl?

Sophia turns and sees THE MASKED MAN. He looks like Josia with the mask, the sunglasses, and the hoodie, but of course, that's not really him.

The masked man is sitting on a CHAIR, identical to the one in her room.

SOPHIA
I want to go back to my mom and dad.

MASKED MAN
Oh. Sure. All you have to do is to play the violin.

Sophia turns and starts walking towards the tree, where the creature who plays the silent violin is.

Suddenly the masked man appears in front of her, sitting on his chair and blocking her way from the tree.

MASKED MAN
Not so fast, Sophia. You will only have one shot. are you sure you're ready?

Sophia's face falls.

SOPHIA
(frustrated)
No.

MASKED MAN
So why don't you go and make yourself ready?

SOPHIA
How will I do that?

The masked man shrugs and vanishes.

The creature and the violin vanish as well.

END OF EPISODE

Annex

Screenplay coverage of California Republic no. 1

California Republic E Barak-Medina

46 pages
TV Pilot Drama Sci Fi, Crime / SF
Analyst: TZ
2017-06-16

LOGLINE:

An FBI agent investigates a death linked to a possible illegal genetic manipulation that someone wants to cover up

BRIEF SYNOPSIS:

In San Francisco, an FBI agent, AMOS BAER (55) investigates the death of a 30- year-old man, Rob Rand, whose retina is grey. With an electronic device, he scans the body and is puzzled by the results. Amos approaches his boss, MIA CHANG (40). He wants additional resources for his investigation. He discovered that the dead guy has some sort of unrecognizable biological transformation. It's beyond the system's knowledge. However, he can't say that the man was murdered, he just suspects genetic manipulation. Mia denies his request.

In a futuristic laboratory, WAYNE works with Dr. INDIRA SAJEL (50's). He tells her that Rob Rand is

dead. She doesn't seem to be too concerned; he knew the risks.

Amos meets with his ex-husband AARON. Amos needs his help. He needs to use the university lab and his researcher. The researcher examines the DNA sample from the dead man but tells Amos it will take a while to analyze it and he may not be able to. The researcher tells Amos that Dr. Indira Sajel at SS might be able to analyze what he's found.

Amos receives disturbing information from Detective Lawson. Rob Rand's list of calls includes Amos' daughter VANESSA JACOBS BAER.

Flashback to two months ago. Vanessa, a physics, works at the development center with Dr. ELISHA GREY, who has a bionic hand. She meets Rob Rand at the center. She likes him, but when he goes missing, she becomes concerned. Amos tells Vanessa about Rob's death and about Rob's illegal genetic manipulation.
Vanessa didn't know what Rob was doing, but she remembers Rob telling her that they are in a generation that will choose when to die.

Wayne visits his sick wife DANA. There's nothing they can do to save her right now. He wants her to undergo Cryonics. She isn't sure but eventually agrees.

Amos visits the SS office. He's looking for Dr. Indira Sajel, but they claim she doesn't work there. Amos is shocked to learn that Detective Lawson is no longer on the case of Rob Rand. The case was closed and his body removed. Amos confronts Mia about the missing body. His DNA was only 99.97 percent human. Amos wants to investigate

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Wayne's personal money transactions. Mia gives Amos a file on Indira Sajel.

Amos tracks down Indira Sajel. He questions her about Rob Rand, but she claims she doesn't know him. He wants to know what kind of treatment would result in one's retina turning grey, one's skin color change, and result in DNA which is slightly not human. Sajel suggests it might be a new regenerational gene therapy. Sajel makes a slip when she mentions Amos' husband Aaron.

Flashback to 2008, Young Aaron and Amos (30's) decide they want to have a baby. They mix their sperm/DNA together to give an equal chance of who will be the baby's biological father. They research who should be the mother but run into some disagreement. They eventually make a baby. In a clinic in India, they meet their baby daughter, Vanessa. They agree not to know who the biological father is.

Years later, after Aaron and Amos separate, Amos admits knowing that Aaron is Vanessa's biological father. Aaron lied to Amos, he never included Amos' DNA. Aaron admits knowing some of her mothers.

In the present, Vanessa begins to ask questions about Rob and what he was involved in. Dr. Grey warns Vanessa to keep her mind on her job, but Vanessa questions Aaron.

Amos tracks down Mr. RAND, the relative who signed out Rob Rand's body. He was paid to remove the body, but he doesn't know by whom.

Aaron contacts Sajel and accuses her of being careless about Vanessa and Rob. Sajel tells Aaron

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that Vanessa is beautiful and she wants to know when she'll be ready to join the group.

Dr. Sajel leads the cryogenic procedure on Dana as Wayne watches. When it's over, Wayne contacts Aaron.

Amos tracks down a financial transaction from Rand and connects it to someone named Walker, who runs a biotechnology and pharmaceutical business.

At Walker's lab, men bring in Rob Rand's body.

WHAT WORKS / WHAT DOESN'T /SUGGESTIONS

CALIFORNIA REPUBLIC is a proposed new TV drama pilot that appears to take place in the future. The story's genre combines drama, crime, and science fiction. They are well blended. The pilot's main story centers on the death of a man who appears to have had his DNA illegally manipulated. An FBI agent, who specializes in illegal genetic manipulation, discovers that there's more to his death that leads to an intriguing conspiracy. The idea or concept of genetic treatment code violations is appealing.

The plotline captures one's attention. The idea of DNA or genetic engineering and manipulation makes for a solid hook. The series has the potential to explore the moral argument of advanced medical and genetic technology and how this can be used to benefit man and society versus how it can be detrimental to man and society. It's a relevant debate and one that maintains one interest. In fact, consider the idea of some of the characters engaging in such a debate.

The pilot presents with strengths and weaknesses. The goal appears to be clear and the stakes feel high. A murder mystery or death mystery is always engaging and pulls the audience into the story. However, the series of events is

not always clear and it would help to clarify them. The tension is an area that can be further developed. In addition, further character development is suggested. Finally, the professional presentation should be polished.

The pilot begins with a confusing scene at the San Francisco City Hall. Although the story ends with the men in the opening scene, it's not the most engaging scene. Consider if there can be a stronger one that immediately hooks the audience. It can even begin with the death of Rand.

The decision for the next scene in the big White room also should be reconsidered. Instead, consider after showing the first teaser scene to transition to Amos. The Wayne and Dana scene can come later.

When the body is found, identify the body as being Rob Rand. It's confusing as structured now. At first, one doesn't realize that when there's a mention of Rob Rand being dead, that it's the same person. Just be as clear as possible

There's a solid hook when Amos discovers the DNA abnormality. This captures one's interest and this is the inciting event that begins the conspiracy. The pilot is driven by this mystery. The story feels focused.

However, it would benefit the script to enhance the action, suspense, and the tension. The story is dominated by dialogue. It's challenging to create compelling excitement and tension watching people talk. Thus, reconsider some of the events and find ways to add more action. This can be a break-in; it can be someone following and stalking another character. It can be a car chase or foot chase, or it could be another death or murder. For example, if someone thinks Vanessa is asking too many questions, maybe something happens that is dangerous to her but looks like an

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accident.

Also, if the story involves DNA manipulation perhaps there's another character that has undergone some form of illegal genetic manipulation and the story highlights how this begins to affect them physically, emotionally, and psychologically.

Adding a compelling subplot to the pilot regarding another investigation that features DNA manipulation is another suggestion of how to add more action. For example, maybe Amos has been tracking an illegal organization or black market underground group that sells illegal DNA or body parts etc.

What does work is and is very engaging is the backstory involving Amos and Aaron and the conception of the baby. The idea that Aaron lied to Amos makes for a nice reveal. There's the mention of "mothers" which feels intriguing but it may benefit the pilot to explain this to the audience.

With that said, it feels clear that Sajel is Vanessa's mother. If the intention is to keep this more of a secret, then tone down the implications such as Sajel looking at her and saying how beautiful she is.

The audience doesn't understand the idea of the "group" and Vanessa joining it. Consider if it would benefit the pilot to explain this or not. Obviously, not everything needs to be explained in a pilot and it can be peeled away as the series progresses.

Amos wants to track down the financial connection with Wayne, but one isn't sure how he connects Wayne to the investigation. Perhaps clarify this. Then later, he's looking at Rand's financial history, which makes more sense.

The ending with the body of Rand being at the new lab

creates nice anticipation, but one feels like the pilot should end on even stronger tension or several different cliffhangers. The objective is to get the audience hook on the show.

The character of Amos is likable. It's easy to root for him. However, try to find something that makes him feel a bit more distinctive and unique as a character. It can be a flaw or a habit, but something that makes him feel more original as an investigator. He does have inner conflict about Aaron, although one isn't sure if he still cares for Aaron or not. While Amos is proactive, his actions aren't very exciting and that is why it's suggested to enhance the physical action and tension.

Vanessa is a smart woman and a curious woman, who senses that there's something more going on in the office where she works. As mentioned, instead of showing her asking question, consider showing her snooping around and almost getting caught to make her more proactive. Even consider that she was romantically involved with Rand to make it more personal.

Aaron (whose name sounds too much like Amos) definitely has a devious and mysterious side. He tricked Amos and one can sense that he knows a lot more about Rand's death.

Sajel is a mysterious woman. She's clearly smart. One isn't exactly sure of her goal or her motivation. If she's a possible love interest for Amos (it's not clear in this world if he's gay or if they are bisexual), elevate their chemistry with each other by adding additional witty banter and make sure that they challenge each other. The best way to create chemistry by balancing attraction with conflict.

The subplot involving Wayne and Dana is also intriguing. This uses technology the audience is familiar with and curious about. It captures great interest and creates nice anticipation about what might happen to Dana. The audience immediately makes an emotional connection with her,

although one is suspicious of Wayne's true motivations.

The dialogue sounds consistent with the characters and the voices reveal information about their values and personality. Vanessa questioning her boss and father demonstrates her curiosity. Amos' voice reveals that he's a skilled investigator and that he doesn't give up.

The professional presentation can be stronger. There are several typos and missing periods. There's a cold opening or teaser, but no acts. Scene numbers are not required in a spec script. On page 30, clarify the timeline when it transitions back to the present. It also may help to clarify the year that the present story takes place to help orient the audience. Add other future technology to create a more vivid world.

The goal of any pilot is to convince the audience and a producer that this can make for a long-term series. This is why the story and the characters need to be compelling. Consider a stronger ending, more tension, and other mysteries to convince the audience they want more and to demonstrate to the producer what the show will look like in future episodes. It's clear that Amos will continue to investigate the death of Rand, but adding other cases that Amos investigates will give the pilot more substance and show what this series can do.

SCREENPLAY READERS SCRIPT ANALYSIS GRID

STORY	SCORE
Concept is fresh and/or original	75
Concept is/contains a strong and/or buzzworthy hook	80
Theme is well executed/interweaved well	80
First 10 pages set up the story well	77
First 10 pages are compelling	75
Script is well structured	75
Every scene in the script feels essential	76
Scenes are the appropriate length	80
Stakes are clear/conflict is strong and/or compelling	77
Characters' choices drive the story forward	80
Pacing is strong and the story keeps moving	77
Story is not overly complicated or hard to follow	77
Story is not bogged down by exposition	73
Tension builds/escalates throughout	73
The climax/resolution is satisfying	74
CHARACTER / DIALOGUE	
Protagonist(s) is (are) likable and/or compelling	77
Supporting characters are likable and/or compelling	77
No characters were extraneous	80
Dialogue reads naturally/believable within this story	80
Dialogue reveals character	81
READABILITY	
Format/presentation adheres to industry standards	80
Spelling, punctuation, grammar, and usage	77
Action text is concise, not overly descriptive/prose	81
Action text "shows" rather than "tells"	95
Overall readability	75

AVERAGE SCORE	78.08
RECOMMENDATION	Consider with Reservations

GLOSSARY OF ANALYSIS GRID TERMS

Concept is fresh or original

How original, fresh, or unique our analyst found your script's concept to be. A low score in this category isn't always bad, as many script buyers prefer tried and true concepts.

Concept is/contains a strong and/or "buzzworthy" hook

Does your concept have a strong hook? In short, this is a measure of how much our analyst estimates it would cause people who hear it say "I wish I'd thought of that."

Theme is well executed/interweaved well

Does your story have a strong theme or motif? Is it worked into your story well?

First 10 pages set up the story well

How our analyst feels your first 10 pages help get things in motion.

First 10 pages are compelling

Do your first 10 pages draw the reader and the audience into your story and engage them?

Script is well structured

Does your script have a structure, whether it's 3-act, 8-act or something completely different? If it sets up a new structural convention, does it serve the story well?

Every scene in the script feels essential

Does each and every scene serve a purpose in propelling the plot, or revealing character, or setting a tone, or engaging the reader?

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Scenes are the appropriate length

Are your scenes too long, or too short, for what they're presenting?

Stakes are clear/conflict is strong and/or compelling

Are the stakes high enough? Is it clear what they are? Does your story have conflict?

Characters' choices drive the story forward

Do your characters' actions, choices, and reactions drive the story? Does causality drive your plot, or do your scenes unfold too arbitrarily, or too episodically?

Pacing is strong and the story keeps moving

Whether your story is intended to be fast-paced or a slow burn, does the pacing feel right?

Story is not overly complicated or hard to follow

Do you have too many scenes, characters, plot threads, reveals, or any other elements that are making things too hard for a reader or audience to follow?

Story is not bogged down by exposition

Is your story is explaining things a bit too much? For example, over-explaining via too much backstory, too many flashbacks, too much voiceover, etc.?

Tension builds/escalates throughout

Does your story build tension? Does it do it well?

The climax/resolution is satisfying

Did everything in your story come to a resolution in a way that makes sense, and will be entertaining to an audience?

Protagonist(s) is (are) likable and/or compelling

The protagonist doesn't necessarily have to be likable, but they should at least be fun to watch.

Supporting characters are likable and/or compelling

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Are your supporting characters interesting to watch?

No characters were extraneous

Does every character in your script serve a purpose? Or do we spend time with characters that don't do much for the story?

Dialogue reads as natural and/or believable within this story

Does your dialogue sound authentic within the parameters you've set up for your story? If it's a modern, gritty cop movie, do the cops sound real? If it's an alien space adventure, do the alien overlords speak in a way that lets us suspend our disbelief?

Dialogue reveals character

When your characters talk, does what they say or how they say it tell us more about them as characters?

Format and presentation adheres to industry standards

Does your script look and feel like what the film industry at large would consider to be a pro screenplay?

Spelling, punctuation, grammar, and usage

How well did you manually check spelling? Did you use "their" when you meant "there?"

Action text is concise, not overly descriptive/prose

Are your action lines crisp, brief, and easy to visualize quickly? Or do they have a lot of extraneous description?

Action text "shows" rather than "tells."

Does the action/description text tell us how a character is feeling? Or, preferably, does it show us by having that character do or say something?

Overall readability

How easy to read our analyst feels your script would be for an agent, agent's assistant, contest reader, producer, or other film industry reader.

Overall Rating

Please note: We give our analysts great leeway in determining the Analysis Grid scores of your script. These scores can and do vary significantly from analyst to analyst. Further, the scores do not equate to any particular recommendation grade (PASS, CONSIDER, or RECOMMEND).

PASS - The script is definitely not a lost cause, but it needs a lot of work. 95% of the scripts we read receive a PASS.

CONSIDER - The script still needs work, but may be considered by an agency, producer, contest, et cetera. 4% of the scripts we read receive a CONSIDER.

RECOMMEND - The script is good to go, or very close. 1% or fewer of the scripts we read receive a RECOMMEND.

It's absolutely not Screenplay Readers' place to tell you your work needs stronger female roles or more diversity, but because the film and tv market is shifting, undeniably, towards more diversity in casting, we feel we owe it to our clients to provide this metric so you can decide for yourself whether or not it's even applicable and/or something you can use when considering your project's submission strategy.

Please note that your Bechdel Test grade has absolutely no bearing on any of your coverage, nor your Analysis Grid scores, nor your recommendation grade (PASS, CONSIDER, or RECOMMEND). We recognize the fact that the Bechdel Test is not always applicable, nor its results always indicative of a project's true female representation.

SCREENPLAY READERS
SCRIPT NOTES * SCRIPT COVERAGE * CONSULTATION

Screenplay coverage of California Republic no. 2

tslnotes

CALIFORNIA REPUBLIC
By
Eran Barak Medina

Package: The First
Draft (Television)
Date: 06/18/2017
Page Count: 46 Genre: Sci-fi Analyst: 2B850 Rating: Pass
Score: 5.0

Category	Score
Plot	5.0/10
Characterization	5.0/10
Concept	5.0/10
Format	5.0/10
Voice	5.0/10
Structure	4.0/10
Dialogue	6.0/10

COMMENTS:

CHARACTER:

Amos is an alright guy, if a little generic. He works for the FBI, he has to ask his daughter for help with new technology, he has an ex he still cares about who can really push his buttons. Because of his age (presumably), he's basically been pushed into a boring job at the Bureau, but finds himself pursuing a case he shouldn't, because his gut tells him there's something there. The one thing that makes him a little different than other procedural leads is that he's gay, but that's not a huge thing.

Then there's the fact that almost every scene is led by a man. There are a couple where Vanessa's in charge of the action, but generally, this is a very masculine environment, with the women in small, supportive roles. I would hope, by this time in the future, things would be different in society, and that women would be just as prevalent as men, and capable of more. I'd suggest re-thinking this situation in the next draft.

PLOT:

Underneath the formatting and grammar errors, it feels like the writer might have something interesting going on, but because of those errors, it's hard to tell. Is this just another story about humans in the future being on the cusp of being able to genetically modify each other to the point of immortality? Or is there something more to it? It's like there's something more there, "on the tip of the tongue," so to speak, but it's not in the script. This feels a lot like all those other, previous stories that have similar premises, but I have a feeling there's something more to it.

It's just a matter of making sure that all comes across, or else it really will be just another one of those stories.

Another thing is making sure character's actions or decisions cause every moment of the story, so they're the ones driving the plot instead of the other way around. Generally, this seems to be the case here, but going

through and making sure everything tracks might help with clarifying the logic of what's going on, too.

STRUCTURE:

This was formatting strangely. First, there's a line stating there's a cold open (not formatted correctly), but then there are no other act breaks. Is this show meant for network television? Or cable/streaming? If it's the former, first of all, there's content that wouldn't make it onscreen – but also, it would need formal act breaks, and need to be structured in a way where each act-out was big enough to bring people back after commercials. But if it's the latter? Then there shouldn't be a cold open, and the whole script should be written in a more traditionally filmic way, without formal act breaks, but still in a film's three-act structure. The writer really needs to decide which is the case.

DIALOGUE:

It is good that most of the characters seem to have their own, distinct voices. This could be developed further, but that is already there.

The next step again depends on whether this is intended for network or cable/streaming. If this is meant for network TV, then the show should have a lot of dialogue, since they expect their audiences to be doing other things while the TV's on, and to maybe only be listening to follow what's going on. BUT, if it's meant for cable or streaming, those shows are written more like films, which are far more visual, and in that case, a lot of the dialogue here needs to be trimmed or cut out completely.

Either way, though, it's not good to have long stretches of dialogue where the characters aren't doing anything. Are the actors just going to stand still that whole time? That would be boring – give them something to do while they talk.

CONCEPT:

The sci-fi premise that, in the near future, there have been enough advances in genetics that laws have been created to ethically restrain (or enforce) them is not new (just look at *Gattaca* – or that tepid Arnold Schwarzenegger film, *The 6th Day*). For that reason, it is important to make this story's premise stand out in a way that is new and different than the rest. Right now, it's not there – the details of what's actually going on aren't clear, so the impact of what these people are doing isn't as strong as it could be. The submission stated in its logline that these are fascists, but that's not in the script yet – at this point, they're still just scientists obsessed with seeing how far they can take genetic manipulation. Sure, there's a nod to the Nazis with the SS in their logo, but that's something an audience might not notice.

It needs to be really clear what is going on, or else this won't feel like a fresh story.

OVERALL: **PASS** / CONSIDER /RECOMMEND

Like I said above, this still feels too much like stories I've seen before for me to give this a "consider." There are hints of something more, but that something more isn't yet in the script. There are also a lot of grammar and formatting errors that hold everything back – maybe hiring a copy editor to look at the next draft after it's written would be a good idea.



Package: Full Coverage Date:11/23 2018
Page Count: 55 Genre: Sci-fi Analyst: NW11 Rating:
Consider Score: 7.00/10

Trans-H by
Eran Barak Medina

Category	Score	Percentile
Plot	7.00/10	(82 percentile)
Characterization	7.00/10	(82 percentile)
Concept	6.00/10	(66 percentile)
Format	6.00/10	(63 percentile)
Voice	7.00/10	(85 percentile)
Structure	8.00/10	(94 percentile)
Dialogue	9.00/10	(99 percentile)
Overall Weighted Percentile		**82**

Note: Percentiles are based on historical data of scores given out by this analyst.

About Analyst NW11

The reader graduated with a degree in film from Northwestern University. They co-founded a boutique production company which has created video content for a variety of clients from SDF Capital to MLB Network, and Open TV to the New Zealand All Blacks. In addition, the reader enjoys producing independent narrative shorts, feature films, and comedy sketches. They have served on a judging panel of several genre-focused script competitions.

LOGLINE

JOSIA, an enhanced biohacker, sets out to take down the evil Newman corporation that murdered his brother and make the brain implant technology available for all.

SYNOPSIS

JOSIA is a troubled young man wandering a psychiatric hospital with his mind running. His brother EZRA arrives and calms him down enough to give him a serious proposition: will he consent to an experimental cure Ezra has developed, even if there is a high chance it won't work? Josia agrees.

Ezra takes him back to his lab and inserts a device into Josia's brain. The procedure is very painful, but ultimately successful. Not only is Josia's mood stabilized, but the implant provides him with special abilities. He's able to compute math problems instantly and receive email like informational dumps. Although he still has trouble thinking about his mother, it's clear that he's in a better place. The success of the operation pleases Ezra, since it proves his machine is better than NEWMAN, his competitor. Ezra gives Josia the knowledge to insert the implant into his head as well, and then pitches a committee on his cheaper, superior product.

Unfortunately, the meeting doesn't go as planned. Ezra is curtailed on account of bogus industry regulations; he only quit working for Newman two years ago, supposedly too short a period of time to have his competing enhancement product legally approved. When the committee won't relinquish his submission documents, Ezra suspects trouble. He steals his documents and flees. He instructs Josia to burn the lab and all records. Josia complies. Then, he tracks down his brother in a hospital. Ezra is dead. Josiah tears out Ezra's implant and escapes.

Eight months later, a wealthy, distinguished woman named ANDREA uses her implant to help peacefully thwart a bank robbery. The bank robber makes mention of enhanced people ruining the lives of everyone else.

Meanwhile, JOANA MARZANO tries to help her ailing daughter, SOPHIA. Sophia is sick because her new implant won't take properly. Joana's husband BRAD berates her and says all they can do is wait.

Elsewhere, VANESSA uses her implant to give cold, calculated advice to a company. She advocates firing six senior employees, alienating herself in the room. Later, her father ARON explains why this is poor behavior.

Then he goes to meet in secret with Josia. Aron is a Senator trying to legislate the enhancement industry. He needs to know about Newman's screening process and Josia wants to remove regulations that prevent competition. To ensure they remain linked, Josia blackmails Aron with indecent pictures of him and a younger employee.

Vanessa finagles her way into an exclusive underground club for enhanced people only. She tries to have fun with a few different experiences, and finally finds satisfaction with music. Then, she runs into Andrea. The older woman invites her for a conversation. Vanessa learns that Andrea is from an elderly enhancement trial Newman ran, and that she's a "pirate" with an additional empathy enhancement she installed.

Andrea entices Vanessa to try a more extreme action to cure her boredom - bank robbery. Despite her lack of preparation, or perhaps because of it, Vanessa goes along with the plan. After a few hiccups, they succeed. Then Andrea has Vanessa put all the money back, satisfied that Vanessa has had a meaningful experience.

Sophia's condition worsens considerably. Her parents rush her to the hospital. Since it was an unofficial procedure, treatment is uncovered and costly. Joana thinks back to her conversation with Josia, when she hired him for the pirate implant. Brad goes to Newman and begs for help.

Aron and Sierra Newman partake in a discussion at a university over the future of enhancement regulation. Many protestors want enhancements banned altogether, and already enhanced people to be regulated. Sierra uses Sophia's case to argue for making pirate enhancement illegal. Then, she approaches Brad and offers to take care of Sophia at her own clinic and pay for all her hospital bills. In return, Brad must provide any information he can on the man who did the pirate enhancement. They are particularly interested in the phone Josia gave Joana to communicate with. Maria is able to analyze the broken phone and connect it to Josia.

Sierra examines Sophia. She sees the jellyfish style enhancement and deduces it isn't a normal pirate copy, but a design from Ezra's fashioning. She hints that her desire to get to the bottom of the piracy is stronger than her intention to protect Sophia.

Brad joins a protest group meeting. He doesn't participate, but watches them discuss the issue of enhancement.

Finally, the episode ends inside of Sophia's mind where Josia talks to her about how to leave her coma.

COMMENTS

OPENING THOUGHTS

TRANS-H is an exciting science fiction pilot that does an excellent job teasing out the potential for future stories. The best parts of the pilot are new relationships - like Andrea and Vanessa - or characters obviously in the midst of change. Elsewhere, the script could use some attention to proofreading and the deeper aspects of world-building.

CHARACTERS:

JOSIA is the main figure in TRANS-H, an outlaw imbued with enhanced abilities. The screenplay does a good job setting him up as a shadowy Robin Hood figure. That's why it's unfortunate that he loses some agency later

in the script. He doesn't directly impact much of the story after the beginning prologue. In general, he's most interesting when his actions reveal unexpected sides of his personality. For example, it's very telling that he chooses to blackmail Aron; he's more of an anti-hero than initially established. EZRA is only in the screenplay for a few pages, so it's hard to get a read on his character too deeply. It's possible more will be revealed through flashback.

BRAD emerges as the most interesting side character (although Andrea and Vanessa make a great pair) if only because the end of the episode leaves his mindset unresolved. When he visits the protest group, right after speaking with Maria, it's unclear what he's capable of.

Unfortunately, ARON's goals are hard to parse too, but with less dramatic effect. He clearly wants to make a big impact as a Senator since he's willing to meet with Josia. But even after hearing him speak (briefly) it's a little unclear what his personal end goal is and what he's willing to risk. Frankly, regulation seems like a reasonable reaction to enhancement, so why is he even meeting with Josia, unless he thinks any level of regulation is impossible to achieve? Or perhaps, what motivates him to take on Newman, especially given that his own daughter is enhanced?
Speaking of which, VANESSA is the character that gives the show its biggest sci-fi edge. It's truly unique to see a 13-year-old girl given this much power. Rather than explain "enhancements make you super smart," her very existence is a great way to contextualize the nature of transplants. Her budding relationship with ANDREA, a rare enhanced person of advanced age, bodes well for the show to go in new directions.

Finally, SIERRA is a strong villain. Her Machiavellian use of Sophia's plight for personal gain is pure entertainment. There are times that she seems reasonable...only to imply a threat against those weaker than her. She's the kind of character that audiences love to hate.

PLOT:

The TRANS-H pilot does a good job establishing the scope of the series narrative. By the end, we understand that there are a number of factions and see where the power lines fall. As mentioned above, Newman is a worthy foe for the narrative. It's clear that the fight for regulation, banning, and everything in between will not be without casualties. TRANS-H ends on an open note as to the next step for most of these people, but the lack of resolution is a good way to ensure curiosity.

Still, the script could benefit from more concrete description of the future setting beyond enhancement. This would help bolster the various plot possibilities and help define expectations for the audience going forward. That's why it's a shame the year is never stated and it's unclear what other increases in technology exist in tandem with enhancements. For example, there are many references to old phones versus advanced ones, but what are the meaningful differences between the two? You scroll on an old phone, but you don't on a new one?

Most importantly, it's clear that the world is in some kind of turmoil. Enhancements are disrupting the world order, but the issue feels a little contrived when it's only one discussed. Since air quality is better because of Vanessa, what crises still exist? Overpopulation? Famine? War? Disease? In general, the idea of conflict is important to selling the stakes of enhanced people existing in the world. If the world is going to shit that's why people would be terrified of being left behind, and furthermore, there's the potent thematic question of if enhanced people can actually make the world a better place or if they are just as human (vulnerable) as the rest of us. It's worth engaging with to push the "enhancement" issue beyond the obvious ideas.

STRUCTURE:

The structure is one of the best attributes of TRANS-H. The show starts quickly with an intriguing sequence, then adds new plot threads in quick succession. The separate character introductions of Andrea and Vanessa are both fun to watch. And even though the scenes of Joana and her family seem unrelated at first, they join

the narrative in a satisfying way as the pilot progresses.

The middle section is even more enjoyable when it finds unpredictable territory to explore. Andrea and Vanessa crossing paths at the club is a great example. Not only was it unexpected that they'd meet, but it was thrilling to see them commit (sort of) a bank robbery! The sequence says so much about their characters, yet leaves the future arc of their relationship a mystery. These scenes also casually lay out the ways that Vanessa intersects with her father's business and Andrea with the Newman company.

In addition, the ending few scenes give Brad a better purpose than his role as grouchy dad before. Earlier, it's hard to tell which member of the Marzano family is the most important to follow. Between him speaking with Newman officers and visiting a protest meeting, he suddenly becomes a person to watch moving forward.

The big flashback sequence where Joana calls Josia is the one obvious section to attend to. In general, it's too long and drags down the pacing. It seems that the most important element of the sequence is to feature the philosophical dialogue from Sophia and Josia that explains their motivations. Other details may not be necessary.

Finally, as mentioned in the character section above, it's a little unfortunate that Josia doesn't influence the narrative very much in the later half. But it's a good touch that Maria is on his trail. The end of the episode does build a good portion of the suspense.

FORMAT/GRAMMAR/SPELLING:

Unfortunately, there are a number of issues regarding the format, grammar, and spelling of TRANS H. Luckily, these mistakes are quite simple to identify, and can be easily fixed by a thorough edit.

For example, check for misspelled words throughout the screenplay. I notice the word "fist" spelled "feast" on page 15. In addition, there are a number of sentences that read as incomplete, such as "looks at him with

plead” on page 5 and “Brother Enhancement in unholy” on page 41. In general, watch for phrasing in descriptions or dialogue that is awkward or breaks colloquial convention. One easy trick to finding these stylistic errors is to simply read the script aloud from start to finish. In general, whenever sending out a script, it’s a good idea to proofread carefully and make sure that you’re putting your best foot forward. Frankly, most script competitions or production companies will not abide by a script with more than a few small errors.

For a detailed look through your script for grammar / spelling / formatting errors, consider upgrading toa PREMIUM COVERAGE.

DIALOGUE:

TRANS-H moves quickly, which means that the dialogue is generally right down to business. The best scenes are able to communicate a number of ideas on character, plot, and theme, without any fuss. However, the fast pace occasionally means that side characters speak in stilted/cliche phrases to communicate their ideas. For example, most of the medical professionals in the screenplay speak without the same personality given to others. One trick is to give them actual names, and then personality traits will follow. Given that the female doctor appears more than once, it’s a good way to make her standout.

As touched on in the FORMAT section, there are a few lines of dialogue that feature awkward phrasing or unfinished dialogue. One example is when a doctor declares, “It looks like her brain is stroking” on page 35. Most of these lines can be improved simply by being read aloud, and tweaked to match normal speech patterns.

CONCEPT:

TRANS-H is a high-concept sci-fi show which resonates thematically with a host of other stories in the genre. From METROPOLIS to BLADE RUNNER to ALTERED CARBON, science Fiction has always focused on the intersection between technology, individual humanity, and society. What makes TRANS-H stand out is the balanced focus between personal storytelling and political intrigue.

The larger plot machinations inherent to the premise will be a big hook for viewers that like serialized TV.

MARKETABILITY: LOW / **MEDIUM** / HIGH

TRANS-H has medium marketability, certainly trending towards the high end. For one, despite the sci-fi trappings, the pilot does not indicate the need for very expensive special effects. Most of the story focuses on people, and the pilot makes room for a variety of diverse roles. There are explicit parts needed for women, people of color, and a host of age ranges. The only aspect of the concept that is a tough sell is the genre. Science fiction is fairly popular, but the show is evidently geared more towards adults, which makes the market a little bit more acute.

OVERALL: PASS / **CONSIDER** / RECOMMEND

In its current state, I would CONSIDER TRANS-H. The screenplay has a strong pilot structure that invests heavily in interesting characters. The groundwork is done for an expansive serialized show, but there is clear room for improvement. If the author edits with an eye towards a smoother writing style and consistent world-building, TRANS-H will really develop a story-engine to carry a full series.

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Filmography and literary works

Name of creation	Details
"1984"	Medium: novel Year: 1949 Country: UK Author: George Orwell One-line description of premise: A loving couple caught, tortured and broken to learn obedience in a dystopic totalitarian governed country.
"2001: A Space Odyssey"	Medium: movie Year: 1968 Country: USA Creators: Ron Howard (director), and Akiva Goldman (screenwriter) One-line description of premise: The life story of John Nash, a genius mathematician who copes with schizophrenia.
"A Beautiful Mind"	Medium: movie Year: 2001 Country: USA Creators: Stanley Kubrick (director & screenwriter), and Arthur C. Clark (screenwriter) One-line description of premise: A space mission goes bad when the AI computer which runs the spaceship starts malfunctioning and fight the astronauts.

"Akta Manniskor"	Medium: TV series Year: 2012-2014 Country: Sweden Creator: Lars Lundstrom One-line description of premise: Life in a world where humanoid robots serve man, and some of them develop consciousness.
"Alice's Adventures in Wonderland"	Medium: novel Year: 1865 Country: UK Author: Lewis Carroll One-line description of premise: A girl enters a fantastic world, goes through adventures and copes with a witch.
"Alien"	Medium: movie Year: 1979 Country: USA Creators: Ridley Scott (director), Dan O'Bannon (screenplay) One-line description of premise: A monstrous alien attacks the passengers of a commercial spaceship.
"All the President's Men"	Medium: movie Year: 1976 Country: USA Creators: Alan J. Pakola (director), William Goldman (screenplay); based on a non-fiction book by Carl Bernstein and Bob woodward. One-line description of premise: Two journalists assigned to a small story that turns out to be the biggest political scandal in American history – Watergate.

"Altered Carbon"	Medium: TV series Year: 2018-present Country: USA Creator: Laeta Kalogridis; based on a novel by Richard Morgan. One-line description of premise: A mercenary brought back to life in another body 350 years after his death, when hired by a billionaire to investigate his own murder.
"Altneuland"	Medium: novel Year: 1902 Country: Austria-Hungary Author: Theodor Herzl One-line description of premise: Two voyages of a young Jewish intellectual and a Prussian aristocrat to the land of Israel, and witnessing its development
"Avatar"	Medium: movie Year: 2009 Country: USA Writer-director: James Cameron One-line description of premise: A man who operates an avatar of the life form of a distant planet, helps the local inhabitants to fight off the humans who endanger their planet in pursue of minerals.
"Arrival"	Medium: movie Year: 2016 Country: USA Creators: Denis Villeneuve (director), Eric Heisserer (screenplay); based on a "Story of Your Life", a short story by Ted Chiang. One-line description of premise: A linguist is called to try to connect with strange aliens.

"Battlestar Galactica"	Medium: TV series Year: 2004-2009 Country: USA Creator: Ronald D. Moore; based on a story franchise by Glen A. Larson One-line description of premise: a space battleship leads a group of human survivors away from creatures called cylons, who killed most of humanity, and in search of a distant human inhabited planet called earth.
"Beggars in Spain"	Medium: novel Year: 1990 Country: USA Author: Nancy Kress One-line description of premise: A growing gap in abilities between enhanced people who don't need to sleep, and regular people leads to class tension and nearly a fatal war.
"Black Mirror"	Medium: TV series Year: 2011-present Country: UK Creator: Charlie Brooker One-line description of premise: An anthology of one-hour drama movies about the dangers and dilemmas of life disrupted by technologies.
"Blade Runner"	Medium: movie Year: 1982 Country: USA Creators: Ridley Scott (director), David Peoples, Hampton Fancher (screenwriters); based on Philip K. Dick's novel "Do Androids Dream of Electric Ship?" One-line description of premise: A specialized cop chases a group of dangerous refugee androids.

"Brave New World"	Medium: novel Year: 1932 Country: UK Author: Aldous Huxley One-line description of premise: A research psychologist challenges the order of a utopian, well-designed world and gets into conflict with the government.
"Children of Man"	Medium: movie Year: 2006 Country: UK, USA Creators: Alfonso Cuaron (director & co-screenwriter), Timothy Sexton, Davis Arata, Mark Fergus, Hawk Ostby (screenwriters); Based on a novel by P.D James (1992). One-line description of premise: 2027. A man protects a refugee, the first pregnant woman after 18 years of global infertility, from the chaotic streets and the government's pursuit of illegal refugees.
"Chinatown"	Medium: movie Year: 1974 Country: USA Creators: Roman Polanski (director), Robert Towne (screenwriter) One-line description of premise: A private detective is hired by a woman who want him to find if her husband is having an affair, which gets him involved in a conspiracy to steal L.A water and a case of incest both related to a tycoon.
"Counterpart"	Medium: TV series Year: 2017-present Country: UK Creator: Justin Marks One-line description of premise: A man working for a secret governmental agency finds out the world has been split some years in the past, and he and his counterpart/self needs to act to save one side of the world from a conspiracy to spread a lethal virus.

"Cyborg"	Medium: Novel Year: 1972 Country: USA Author: Martin Caidin One-line description of premise: An injured astronaut restored with bionic parts and uses his newly acquired strengths to fight crime.
"Doctor Who"	Medium: TV series Year: 1963-1986; 2005-present Country: UK Creators: Sydney Newman, C. E. Webber, Donald Wilson One-line description of premise: An alien with a human appearance who can travel through time using a time-machine spaceship, explores the universe and fights enemies who wish to harm humanity and other species.
"Edge of Tomorrow"	Medium: movie Year: 2014 Country: USA Creators: Doug Liman (director), Christopher McQuarrie, Jez Butterworth, John-Henry Butterworth (screenwriters); based on the novel "All You Need is Kill" by Hiroshi Sakurazaka. One-line description of premise: A military officer battling aliens who try to take over earth, dies and relives the day of his dying battle until he figures out how to win the battle.
"Electric Dreams"	Medium: TV series Year: 2017-present Country: UK, USA Creators: Ronald D. Moore, Michael Dinner; based on short stories by Philip K. Dick. One-line description of premise: An anthology of one-hour science fiction TV films based on Philip K. Dick's short stories.

"Ender's Game"	Medium: novel Year: 1985 Country: USA Author: Orson Scott Card One-line description of premise: A gifted boy sent to a futuristic military academy, where he is trained with roughness to prepare him to lead earth against an alien threat.
"E. T"	Medium: movie Year: 1982 Country: USA Creators: Steven Spielberg (director), Melisa Mathison (screenwriter) One-line description of premise: A boy meets an alien and wants to hide him from the authorities and help him get back home.
"Eternal Sunshine of the Spotless Mind"	Medium: movie Year: 2004 Country: USA Creators: Michel Gondry (director), Charlie Kaufman (screenwriter) One-line description of premise: A man goes through a memory erasing procedure as a revenge of his x-girlfriend doing so but changes his mind in the midst of the procedure and tries to hold on to the memories of love.
"Flowers for Algernon"	Medium: short story (later turned to a novel) Year: 1959 Country: USA Author: Daniel Keyes One-line description of premise: A retard man undergoes an operation which turns him into a genius but knows he will lose his smarts when watching a mouse that went through the same procedure deteriorates.

"Gattaca"	Medium: movie Year: 1997 Country: USA Creator: Andrew Niccol (director & screenwriter) One-line description of premise: A "natural born" man tries to cheat about his DNA and get accepted to the space program, which is reserved only to genetically engineered people.
"Gravity"	Medium: movie Year: 2013 Country: USA Creators: Alfonso Cuaron (director & screenwriter), Jonas Cuaron (screenwriter) One-line description of premise: A female astronaut tries to get back to earth after a malfunction in her spaceship.
"Heroes"	Medium: TV series Year: 2006-2010 Country: USA Creator: Tim Kring One-line description of premise: People who discover they have superhuman abilities fight with and against each other and against organizations and people of power who wish to exploit them.
"Humans"	Medium: TV series Year: 2015-2018 Country: UK, USA Creators: Sam Vincent, Jonathan Barkley; Based on the Swedish TV series "Akta Manniskor". One-line description of premise: Life in a world where humanoid robots serve man, and some of them develop consciousness.

"Iron-Man"	Medium: movie Year: 2008 Country: USA Creators: Jon Favreau (director), Mark Fergus, Hawk Ostby, Art Marcum, Matt Holloway (screenwriters); Based on the comic series by Stan Lee. One-line description of premise: An owner of a weapon company creates a suit that gives him superpowers and fights a terror organization who used his weapons.
"Jessica Jones"	Medium: TV series Year: 2015-2019 Country: USA Creator: Melissa Rosenberg One-line description of premise: A guilt-haunted female former superhero faces an enemy that can take control of people's minds.
"Knight Rider"	Medium: TV series Year: 1982-1986 Country: USA Creator: Glen A. Larson One-line description of premise: A man and a car operated by artificial intelligence fight crime.
"Life on Mars"	Medium: TV series Year: 2006-2007 Country: UK Creators: Matthew Graham, Tony Jordan & Ashley Pharoah One-line description of premise: A detective involved in an accident in 2006 finds himself waking up in 1973 working in a police station with a violent chief.

"Limitless" (movie)	Medium: movie Year: 2011 Country: USA Creators: Neil Burger (director), Leslie Dixon (screenwriter) One-line description of premise: A failed author discovers a pill that gives him incredible cognitive abilities and gets in trouble with the mafia.
"Limitless" (TV series)	Medium: TV series Year: 2015-2016 Country: USA Creator: Leslie Dixon One-line description of premise: A failed musician discovers a pill that gives him incredible cognitive abilities and uses it to help the FBI.
"Looking Backward: 1887-2000"	Medium: novel Year: 1888 Country: USA Author: Edward Bellamy One-line description of premise: A man from 1887 wakes up at 2000 and discovers USA has turned into a just society.
"Lucy"	Medium: movie Year: 2014 Country: France, USA Director-writer: Luc Besson One-line description of premise: A woman forced to swallow and smuggle a special kind of a drug becomes amazingly smart, fights the drug gang and evolves into an omnipotent being.

"Man and Superman"	Medium: play Year: 1903 Country: UK Author: George Bernard Show One-line description of premise: A young woman courts a talented man her father appointed as one of her guardians and causes him to change his mind from his radical social beliefs.
"Maniac"	Medium: TV series Year: 2018 Country: USA Creator: Patrick Somerville One-line description of premise: A man and a woman participate in an experiment designed to make them face their fears, and go through a series of parallel lives.
"News from Nowhere"	Medium: novel Year: 1890 Country: UK Author: William Morris One-line description of premise: A socialist wakes up in a utopian futuristic society where there's common ownership and a democratic control over means of production.
"Odd John"	Medium: novel Year: 1932 Country: UK Author: Olaf Stapeldon One-line description of premise: The life of John, a mutant genius who can't fit in with human society, creates and then destroys a colony for his kind.

"Orphan Black"	Medium: TV series Year: 2013-2017 Country: Canada Creators: Graeme Manson and John Fawcett One-line description of premise: A woman can-artist assumes the identity of a woman who committed suicide and looks like her and discovers that her and the woman are clowns, and that someone is haunting clowns like her.
"Person of Interest"	Medium: TV series Year: 2011-2016 Country: USA Creator: Jonathan Nolan One-line description of premise: A genius engineer hires a detective to prevent crimes that the artificial intelligence system he designed can predict.
"Ready Player One" (movie)	Medium: movie Year: 2018 Country: USA Creators: Steven Spielberg (director), Zak Penn, Ernest Cline (screenwriters); based on a novel by Ernest Cline One-line description of premise: A gamer tries to win a virtual reality game that promises ownership of the virtual reality world before an evil corporation beats him to it.
Rope	Medium: movie Year: 1948 Country: USA Creators: Alfred Hitchcock (director), Arthur Laurents (screenwriter), Hume Cronyn (film story); based on a play by Patrick Hamilton One-line description of premise: Two young men try to pull off a perfect crime and kill their classmate and are suspected by their former teacher.

"S.H.I.E.L.D (Agents of S.H.I.E.L.D)"	Medium: TV series Year: 2013-present Country: USA Creators: Joss Whedon, Jed Whedon and Maurissa Tancharoen; based on a comic series by Stan Lee and Jack Kirby One-line description of premise: A squad of agents protecting people from aliens fights a rival evil agency.
"Sliders"	Medium: TV series Year: 1995-2000 Country: USA Creators: Tracy Torme and Robert K. Weiss One-line description of premise: A group of people move between parallel world looking to find their way back to their original world.
"Spaceballs"	Medium: movie Year: 1987 Country: USA Creators: Mel Brooks (director & screenwriter), Rony Graham, Thomas Meehan (screenwriters) One-line description of premise: a star-wars parody about intergalactic wars over fresh air.
"Star Trek"	Medium: TV series Year: 1966-1969; 1987-1994 Country: USA Creator: Gene Roddenberry One-line description of premise: The starship 'Enterprise' explores the universe to discover distant cultures.

"Star Wars"	Medium: movie series Year: 1977-present Country: USA Creators: George Lucas One-line description of premise: An aristocrat must discover his hidden powers so he can use them to save the universe from an evil intergalactic empire.
"Story of Your Life"	Medium: novella Year: 1998 Country: USA Author: Ted Chiang One-line description of premise: A linguist called to communicate with aliens, learns from them how-to see-through time and needs to make harsh decisions about the future she can see.
"Stranger Things"	Medium: TV series Year: 2016-present Country: USA Creators: The Duffer Brothers One-line description of premise: A group of children meet a mysterious girl with superpowers who helps them rescue their friend who is caught in a different dimension.
"Superman"	Medium: comic book Year: 1938 Country: USA Creators: Jerry Siegel and Joe Shuster One-line description of premise: An alien superhero disguised as a man fights crime and tries to protect humanity from a villain with super-powers from his home planet.

"The 100" (TV series)	Medium: TV series Year: 2014-present Country: USA Creator: Jason Rothenberg; based on a novel by Kass Morgan One-line description of premise: 100 juvenile delinquents sent back to earth to find out if it is possible to resettle it many years after a nuclear disaster.
"The Avengers: Infinity War"	Medium: movie Year: 2018 Country: USA Creators: Anthony Russo and Joe Russo (directors), Christopher Markus, Stephen McFeely (screenwriters); based on a comic series by Stan Lee and Jack Kirby One-line description of premise: A group of superheroes try to fight a person with superpowers who is looking to eradicate half of the creatures in the universe to avoid the depletion of resources.
"The Conversation"	Medium: movie Year: 1974 Country: USA Director-screenwriter: Francis Ford Coppola One-line description of premise: A private surveillance expert hired for a job, and tries to prevent a murder he thinks this job might lead to.
"The Dark Knight"	Medium: movie Year: 2008 Country: USA Creators: Christopher Nolan (director & screenwriter), Jonathan Nolan (screenwriter) and David S. Goyer (film story) One-line description of premise: The superhero Batman tries to save the lives of people on a ship that his villain rival, the Joker, has boobytrapped.

"The French Connection"	Medium: movie Year: 1971 Country: USA Creators: William Friedkin (director) and Ernest Tidyman (screenwriter); based on a non-fiction book by Robin Moore One-line description of premise: Two New York detectives are trying to catch a big-time French drug smuggler.
"The Handmaid's Tale" (TV series)	Medium: TV series Year: 2017-present Country: USA Creator: Bruce Miller One-line description of premise: A fertile woman is taken to bare the child of a leader of an extreme religious cult which took over USA and tries to survive so she can reunite some day with her daughter and husband.
"The Handmaid's Tale" (novel)	Medium: Novel Year: 1985 Country: USA Author: Margaret Atwood One-line description of premise: A fertile woman is taken to bare the child of a leader of an extreme religious cult which took over USA and tries to survive so she can reunite some day with her daughter and husband.
"The Hitchhiker's Guide to the Galaxy"	Medium: serial radio broadcast, later turned to novel Year: 1978 Country: UK Author: Douglas Adams One-line description of premise: The adventures of an Englishman in the galaxy after the destruction of earth by aliens who wanted to build a galactic highway.

"The Hunger Games" (novel trilogy)	Medium: novel trilogy Year: 2008-2010 Country: USA Author: Suzanne Collins One-line description of premise: A teenage girl is selected to participate in a lethal reality game and finds herself leading a revolution against a corrupted futuristic government.
"The Last Man on Earth"	Medium: TV series Year: 2015-present Country: USA Creator: Will Forte One-line description of premise: A comedy about a small group of people surviving an epidemic.
"The Leftovers"	Medium: TV series Year: 2014-2017 Country: USA Creators: Damon Lindelof and Tom Perrotta; based on a novel by Tom Perrotta One-line description of premise: A police chief tries to maintain order in a town after 2% of the world population vanished with no explanation.
"The Man in the High Castle" (TV series)	Medium: TV series Year: 2015-present Country: USA Creators: Frank Spotnitz; based on a novel by Philip K. Dick One-line description of premise: In an alternative history where Germany and Japan won WW2 and control America, a woman tries to deliver films that show a different and better world to an anti-Nazi underground leader.

"The Matrix"	Medium: movie Year: 1999 Country: USA Creators: The Wachowskis One-line description of premise: A computer hacker is awakened to see that life as we know it is a simulation ran by aliens who use human bodies as energy sources.
"The Parallax View"	Medium: movie Year: 1974 Country: USA Creators: Alan J. Pakula (director), David Giler, Lorenzo Semple Jr. (screenwriters); based on a novel by Lauren Singer One-line description of premise: A newswoman tries to investigate a conspiracy behind the murder of a presidential candidate.
"The Sopranos"	Medium: TV series Year: 1999-2007 Country: USA Creator: David Chase One-line description of premise: A mafia boss goes to psychotherapy to deal with his panic attacks.
"The Six Million Dollar man"	Medium: TV series Year: 1974-1978 Country: USA Creators: Jerry Fielding, Stu Philips, Mike Post, Mark snow, Gil Melle, Oliver Nelson, Benny Gollson, JJ Johnson One-line description of premise: An injured astronaut restored with bionic parts and uses his newly acquired strengths to fight crime.

"The Time Traveler's Wife"	Medium: novel Year: 2003 Country: USA Author: Audrey Niffenegger One-line description of premise: A man who keeps unwillingly jump through time tries to have a love relationship
"The Terminator"	Medium: movie Year: 1984 Country: USA Creators: Janes Cameron (director & co-screenwriter), Gale Anne-Hurd (screenwriter) One-line description of premise: The mother of the future leader of a resistance needs to escape a robot sent from the future to kill her before she gives birth.
"The Time Tunnel"	Medium: TV series Year: 1966-1967 Country: USA Creator: Irwin Allen One-line description of premise: Two scientists working in a secret time machine facility, are moving between time periods and historical events trying to get back to their own time.
"The Wizard of Oz"	Medium: movie Year: 1939 Country: USA Creators: Victor Fleming (director), Noel Langley, Florence Ryerson, Edgar Allan Woolf (screenwriters); based on a novel by L. Frank Baum. One-line description of premise: A girl enters a fantasy land and has to find a mysterious wizard to get back home.

"Three Days of the Condor"	Medium: movie Year: 1975 Country: USA Creators: Sydney Pollack (director), Lorenzo Semple Jr., David Rayfiel (screenwriters); based on a novel by James Grady One-line description of premise: A junior CIA analyst survives an attack on his station and tries to escape his own organization trying to kill him.
"Thus Spoke Zarathustra"	Medium: novel Year: 1883-1891 Country: Germany Author: Friedrich Nietzsche One-line description of premise: the travels and the speeches of a character called Zarathustra, a man who calls for a new morality and for man's striving to be super human beings in morality and occupations.
"Twenty Thousand Leugues Under the Sea"	Medium: novel Year: 1870 Country: France Author: Jules Verne One-line description of premise: three men become prisoners-guests of the captain of an advanced and secret submarine exploring the seas and need to rescue themselves after the submarine and the crew are damaged and hurt.
"Upgrade"	Medium: movie Year: 2018 Country: Australia Director-writer: Leigh Whannell One-line description of premise: A man paralyzed from an attack in which his wife is killed, is implanted with an artificial intelligence chip that rehabilitates him, gives him super abilities, and helps him seek revenge.

"Westworld"	Medium: TV series Year: 2016-present Country: USA Creators: Jonathan Nolan and Lisa Joy One-line description of premise: Human-like robots in a futuristic amusement theme-park begin to develop consciousness and defeat the park's security who try to shut them down.
"X-man"	Medium: movie series Year: 2000-2018 Country: USA Creators: different directors and screenwriters; based on a comic series by Stan Lee and Jack Kirby One-line description of premise: A war between two groups of mutants with superhuman abilities, one that seeks to take over the world and the other who wishes to protect it.
"Years and Years"	Medium: TV series Year: 2019 Country: UK Creator: Russell T. Davies One-line description of premise: The story of the members of a British family in the changing world of the next decade.

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Titre: Dramatiser l'amélioration humaine: transformer un débat moral et social sur une technologie futuriste en une série télévisée

Mots clés: Science-fiction; Amélioration humaine; Écriture créative; Scénarisation; Recherche par la création; Séries télévisées

Resume: Cette thèse de doctorat est un projet de «recherche à travers la création», qui a pour objectif d'explorer et d'éclairer le processus d'écriture d'un scénario pilote de série télévisée de science-fiction, qui traite du sujet moralement chargé de l'amélioration humaine.

La science-fiction est un genre très important dans le monde en évolution rapide, avec sa technologie en constante évolution. Les romans de science-fiction, les films et les séries télévisées jouent un rôle majeur dans la création d'un discours social, moral et culturel sur la façon dont nous, en tant qu'humanité, pouvons et devons faire face aux technologies actuelles et futures et diriger notre évolution. L'amélioration humaine est l'une des technologies majeures dont l'évolution potentielle pourrait bouleverser et transformer la société et l'humanité de manière significative en offrant à l'humanité la possibilité de transcender la sélection naturelle et de contrôler son évolution.

L'écrivain de science-fiction occupe une position unique dans laquelle il doit médier la science, la technologie et leurs possibilités psychologiques, morales et sociales sous forme d'histoire et de théâtre. Une fois achevé avec tant de succès, le travail de l'écrivain de science-fiction peut offrir de la valeur en contribuant au discours social.

La recherche de cette position unique, entre science, pertinence sociale et narration, est au cœur de ce travail. Son objectif est d'articuler des idées et des conceptualisations pour les considérations, les actions et les décisions créatives nécessaires pour accomplir ce type de défi.

Pour ce faire, j'ai écrit deux scénarios de pilotes de télévision de science-fiction, une version antérieure et une version ultérieure. En parallèle, j'ai étudié le sujet de la valorisation humaine tant du point de vue scientifique que philosophique et social, ainsi que de la théorie et de la pratique de l'écriture de science-fiction, en mettant l'accent sur les récits traitant du développement humain et de la science-fiction actuelle. Séries télévisées. Les deux axes de travail sont étroitement liés et complémentaires. L'étude de l'amélioration humaine et de la science-fiction a participé à la progression de l'écriture, du scénario initial au dernier, ce que j'estime plus satisfaisant pour parvenir à une bonne représentation des questions sociales et morales de l'amélioration humaine, et en réalisant le potentiel dramatique du sujet.

Cette thèse comprend les scénarios et autres supports créatifs, précédés d'un essai critique qui décrit l'étude du perfectionnement humain et de la science-fiction, et analyse l'évolution du processus d'écriture menant au scénario final.

Les enseignements tirés de la recherche soulignent l'importance de la compréhension de l'écrivain de science-fiction de la technologie sur laquelle il écrit (ou du «novum» - le créateur de différence technologique / scientifique); créer une prémisse d'histoire qui dérive de la technologie; explorer les différents aspects moraux, psychologiques et sociaux de la technologie choisie et les traduire en conflits d'histoire et en motivations de caractère; et prendre des décisions du monde de l'histoire qui répondent le mieux aux questions thématiques que l'auteur veut transmettre.

Title: Dramatizing Human Enhancement: How to Turn a Moral and Social Debate about a Futuristic Technology into a TV Series Screenplay

Keywords: Science-fiction; Human enhancement; Creative writing; Screenwriting; Research-through-creation; Practice-led-research;

Abstract: This PhD dissertation is a "research-through-creation" project, which set out to explore and gain insights from the process of writing a science fiction TV series pilot screenplay, that deals with the morally charged subject of human enhancement.

Science fiction is a very important genre in today's rapidly changing world, with its continuously advancing technology. Science fiction novels, movies and TV series play a major role in creating a social, moral and cultural discourse about how we, as humanity, can and should deal with current and future technologies and lead the way we evolve. Human enhancement is one of the major technologies which' potential evolvement could disrupt and change society and humanity in a significant way by offering humankind the possibility to transcend natural selection and control how it will develop.

The science fiction writer is in a unique position in which he/she needs to mediate science, technology and their psychological, moral and social possibilities in the form of story and drama. When done so successfully, the science fiction writer's work can offer value by contributing to the social discourse.

Researching this unique position, between science, social relevance and storytelling, is at the heart of this work. Its objective is to articulate insights

To do so I have written two science fiction TV pilot screenplays, an earlier version and a later version. In parallel, I have studied the subject of human enhancement both for its scientific aspect and its philosophical and social aspect, and also studied about the theory and practice of science fiction writing, with an emphasis on stories that deal with human enhancement and current science fiction TV series. The two lines of work inter-related and complemented each other. The study of human enhancement and science fiction took part in the progression of the writing from the initial screenplay to the final one, which is considered by me to be more satisfactory in achieving both a good representation of the social and moral issues of human enhancement, and in fulfilling the dramatic potential of the subject.

This dissertation includes the screenplays and other creative materials, preceded by a critical essay which describes the study of human enhancement and science fiction, and analyzes the development of the writing process leading up to the final screenplay.

The insights gained from the research highlight the importance of the science fiction writer's understanding of the technology he writes about (or the "novum" – the technological/scientific difference maker); creating a story premise which as a derivative of the technology; exploring the different moral, psychological and social aspects of the chosen technology and translating those to story conflicts and character

and conceptualizations for the considerations, actions and creative decisions required to accomplish this kind of a challenge.	motivations; and making story-world decisions that best serve the thematic issues the writer wants to convey.