

University College Groningen

Bachelor Thesis

Planning the Future of Humanity

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June 15, 2018

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1. Introduction

We are living in a world of constant change, high uncertainty and unpredictable risks. The past few decades were marked by drastic changes that affected all our lives, including the social, economic and political structures of the current world. Our well developed, modern societies are still in the process of modernizing themselves, further evolving their established structures and systems. Thinking about our modern societies reminds of the concept of ‘*strong versus weak uncertainty avoidance*’ societies, introduced by Hofstede, a Dutch social psychologist (Hofstede, 1984). The difference between the strong uncertainty avoidance and the weak uncertainty avoidance society is that the former frantically attempts to control the uncertain future, whereas the latter society simply takes what the future hold for them (Hofstede, 1984, pp. 83 - 84). Following this explanation, we find that the western, modern societies should be labelled as strong uncertainty avoidance societies. Western structures are composed of regulations, laws and social norms. Its institutions are in place to secure these regulations in order to keep ambiguity and uncertainty as low as possible, whilst maintaining clear guidelines for human interactions. All these arrangements have been established to avoid uncertainty and to give humans orientation in an increasingly complex world.

One aspect of a modern society is the process of highly advanced technologies, which definitely will pose a threat to the strong uncertainty avoidance societies of the western world. Nowadays, newest technology accompanies all our daily lives, shaping humans interactions and habits. Whether it is the electronic applications at home, the machines in our factories or the algorithms used in political campaigns, technology has found its place in our social, economic and political structures. Although advanced technology is ubiquitous, its long-term consequences are still a matter of speculation and debate.

This great degree of uncertainty sets off the alarm bells for every strong uncertainty avoidance society. Further development, pushed and fostered by advanced technologies, might lead to a complete reshaping of our social, economic and political structures. This development is likely to place western societies right in the core of an uncertain future. So the question that arises is how to cope with the high degree of uncertainty, or better, how to lower the risk that comes with it?

One approach that has been developed by strong uncertainty avoidance societies in order to reduce uncertainty and risk is *scenario planning*. Scenario planning uses theoretical approaches and models that aid in creating scenarios in the present in order to come up with reasonable assumptions about the future. Since uncertainty seems to be increasingly present in our human structures, the need for scenario planning has increased throughout the last years (Chermack (1), 2003).

Scenarios have also been developed that focus on possible implications of the spread of highly advanced technologies. Numerous academics and intellectuals, for instance Nick Bostrom, Elon Musk, Stephen Hawking, Yuval Harari and Peter Diamandis, have fueled the debate about the consequences of advanced technologies. Their opinions greatly vary, often even polarize. Bostrom, a Swedish professor at Oxford University, has published a book called ‘*Superintelligence: Paths, Dangers, Strategies*’ (2014), in which he introduces a scenario that questions the very survival

of the human species as a consequence of the spread of highly advanced technologies. Elon Musk and Stephen Hawking have raised the same concern, arguing that AI poses dire threats to humankind if no preventive measures are taken that strictly control this development (Sulleyman, 2017, on Musk; Kharpal, 2017, on Hawking). In his book *'Homo Deus'* (2016), the Israeli professor Yuval Harari develops a scenario that describes the emergence of 'The Useless Class'; the majority of people in our future societies that become economically and politically insignificant due to technologies in the job market. Peter Diamandis, a Greek/American entrepreneur, has expressed his opinion together with Steven Kotler in their book *'Abundance: The Future is Better than You Think'* (2012). The book takes a different stance, finding reason to assume that our world can only benefit from the prosperity generated by highly advanced technologies. The scenario of 'The Technophilanthropists' is introduced, describing how wealthy individuals could improve the well-being of people across the globe, through the concept of philanthropy.

It should be seen as valuable to have many diverse and even contrasting views on an uncertain future, as all of them take different aspects into account. However, floating in a pool of scenarios, describing entirely different outcomes could be counterproductive and even increase the level of uncertainty. Hence, we need to find an approach to assess the available scenarios, so that we know which scenarios should be taken seriously and which are just dubious eventualities.

This paper selects two of the above-mentioned scenarios and attempts to assess their quality. The two scenarios are 'The Useless Class', written by Harari, and 'The Technophilanthropists', written by Diamandis and Kotler. From now on, this paper always refers to these two scenarios when using the words *'the two'* scenarios. They were chosen, since they not only seem more probable than for instance Bostrom's scenario, but also go off into two opposing directions, which makes a critical comparison of both scenarios extremely interesting.

The two scenarios have the same starting point, acknowledging that advanced technologies embody an unstoppable development and will soon play an even more profound role in modern societies, however, they describe completely different consequences of this development. Harari argues that advanced technologies will eventually lead to a never before seen degree of social, economic and political inequality, whereas Diamandis and Kotler reason that advanced technologies will eventually narrow the gap between rich and poor. Although it is impossible to determine which of the two scenarios will turn into reality, it is viable to assess the quality of both scenarios. A strong uncertainty avoidance society has immense interest in revealing the quality of both scenarios in order to know what society has to be prepared for. Therefore, this paper investigates the question:

Which of the two scenarios should be seen as the qualitatively higher scenario?

To assess their quality, we need a framework that can be applied to both scenarios. Here I argue that such a framework for assessing the quality of scenarios needs to be developed first, because of two reasons. First and foremost, as Thomas Chermack, founder of the Scenario Planning Institute in America and key figure in the scenario planning field, states: "The evaluation component is nearly absent from the literature of scenario planning." (Chermack (2), 2003, p. 29). Despite the abundance of

scenarios, all suggesting different future outcomes, there are hardly any scenario assessment methods. This poses a major problem, as without an approach to determine the quality of scenarios, one could argue that scenario planning is useless, since low-quality or even false scenarios could trick stakeholders into wrong decisions.

The second reason is that, although some scenario assessment frameworks do exist, we cannot apply them in our context. These frameworks are tailored to scenarios in business contexts that often rely on quantitative data, which is also used when assessing their quality. Our scenarios, in contrast, suggest outcomes, which will impact the entire human species and not just the fate of one company. Further, our scenarios are qualitative and quantitative data is not available for an assessment. This is another reason wherefore the already existing assessment frameworks cannot be used for this paper.

Therefore, this paper first compiles an own set of candidate criteria from the scenario planning literature. We will classify these criteria into three categories: 1) accept, 2) reject, 3) modify and further discuss each criterion, in order to develop a set of criteria that is applicable to the two scenarios. This selected set of criteria is used as the framework of this paper and is eventually applied to evaluate the quality of the two scenarios.

Therefore, let us re-formulate the stated question of this paper as:

Which of the two scenarios should be seen as the qualitatively higher scenario, based on the created set of criteria?

2. The Two Scenarios

Before we can assess the quality of the two scenarios, we briefly summarize the content of each scenario. It is important to note that both scenarios agree that advanced technologies will reshape human structures, however, they differ in their speculations concerning the way in which human structures will be reshaped.

2.1 The Useless Mass

In his book *'Homo Deus'* (2016), Harari discusses multiple scenarios of the future that he thinks are likely, based on his arguments and analogies to the past. Although Harari is very careful in most of his prognoses, he seems certain about the threat that advanced technologies pose towards our present human structures. In his scenario 'The Useless Mass', he stresses the imminent inequality between the scientific/commercial elite that develops advanced technologies and the vast majority of people. He foresees that technology will invade the job market and cause the majority of people to be considered economically irrelevant, which in turns will make them politically irrelevant (Harari, 2016, p. 356). This irrelevance leads to the

emergence of 'The Useless Mass', a phenomenon never before experienced in human history. If this comes true, he states, an extreme social inequality will result from the invasion of highly advanced technologies in the western societies. To summarize, Harari's scenario speculates that the spread of advanced technologies will lead to a devastating imbalance of our human structures due to extreme inequality between the elite that masters the technology and the rest of the people.

2.2 The Technophilanthropists

Peter Diamandis is an engineer, physician and entrepreneur, who is mostly known for the X Prize Foundation that supports technological development to benefit humankind. Steven Kotler is an influential author and journalist. In their book *'Abundance: The Future Is Better Than You Think'* (2012), they argue that technology will benefit all of humanity. "Within a few generations we will be able to provide goods and services, once reserved for the wealthy few, to any and all who need them." (Diamandis & Kotler, 2012, p. 9). This underlying, positive attitude towards advanced technologies is the main difference to Harari's book. Whilst Harari raises speculations about potential disruptions of human structures as the consequences of advanced technology, Diamandis and Kotler state that highly advanced technologies "[...] will soon enable the vast majority of humanity to experience what only the affluent have access to today." (Diamandis & Kotler, 2012, p. 10). Although the book discusses several scenarios, one scenario attracts special attention. Diamandis and Kotler claim that advanced technologies will lead to the rise of technophilanthropists, which are wealthy individuals that accumulated their prosperity through the emerging technologies. Bill Gates is one example of such a technophilanthropist, who uses his personal wealth to support people in dire need. 'The Technophilanthropists' scenario foresees decreasing global inequality, as the lowest classes will receive life changing aid, provided by the scientific/commercial elite that is in charge of advanced technologies.

3. What is Scenario Planning?

Let us start by defining the concept of scenario planning: "A scenario is not a future reality but rather a means to represent it with the aim of clarifying present action in light of possible and desirable futures." (Godet et al., 2010, p. 1488). It is crucial to understand that scenarios are not predictions or prophecies of the future but rather a set of tools that is used to display possible, different futures, all with the purpose of mitigating uncertainty about future events (Godet et al., 2010).

The emergence of scenario planning reaches far back in time. Indirectly, many great thinkers, like Plato, have used scenario writing when philosophizing about the world and speculating about political systems in the future. However, the academic field of scenario planning is a rather new approach. Interestingly, scenario planning was

firstly used in the military context, then as a tool for public policy planning and eventually taken over by corporations in the economic sector. *Herman Kahn* (1922-1983), an American futurist, is often referred to as the father of scenario planning (Bradfield et al., 2005). In 1950, he worked for the US military and developed scenarios that would function as air defence early warning systems. About ten years later, he established the Hudson Institute, where he applied his scenario methodology to conceive societal and political forecasts. Kahn's publications caused controversy among experts and led to a wider theoretical underpinning in scenario planning. One of those experts was *Pierre Wack* (1922–1997), a key figure in the history of scenario planning. In his book *Scenarios: The gentle art of re-perceiving, a thing or two learned while developing planning scenarios for Royal Dutch/Shell* (1984), he stresses the need of combating strategic failure: “In our times of rapid change and discontinuity, these crises of perception – the inability to see a novel reality emerging by being locked inside obsolete assumptions – have become the main cause of strategic failures” (Wack, 1984a, p. 74). Scenario planning is an art that attempts to avoid these strategic failures by analyzing current environmental trends and thus bringing light into the uncertainty of the future.

Wack's book refers to the oil company Shell as a prime example of a corporation that successfully used scenario planning. There was a growing perception of uncertainty among oil companies at the end of the 1960s, which triggered Shell to investigate possible scenarios of the business environment for the following 30 years. Their investigation pointed to a possible discontinuity in the upcoming years, demonstrating the emergence of oil scarcity and rising oil prices (Jefferson et al., 2011). In 1972, the scenario planning team had created six different scenarios, all introducing a different version of a future oil market. In 1973, when the oil crisis hit the market, the developed scenarios gave Shell a head start compared to its competitors (Jefferson et al., 2011).

The Shell example shows how scenario planning can reduce uncertainty about the future. Shell recognized that “[...] there are uncertainties about the driving forces that generate unanticipated futures, which cannot be explored analytically” (Jefferson et al., 2011, p. 1), and hence based their scenarios on a rather intuitive approach. The Shell scenarios followed and further advanced the so-called ‘Intuitive Logics approach’, one of three main schools besides the ‘Cross Impact Analysis approach’ and the ‘Trend Impact Analysis approach’. Before discussing scenario evaluation criteria, we will briefly compare these schools, whilst arguing that the Intuitive Logics approach is the most suitable one in our context.

4. Scenario Planning Theory – Three Schools

4.1 Qualitative versus quantitative approaches

In order to make the first distinction between the three main schools of scenario planning, it is important to clarify that there are two different kinds of scenario planning. You can either approach scenario planning in a qualitative or a quantitative way. Quantitative approaches are mostly used in an economic context, where the scenario creators have much empirical and numerical data on which they can base their future variations on. Accordingly, this approach makes use of mathematical models in developing scenarios. The qualitative approach is used in data-scarce areas, such as in cultural or political contexts. Scenarios are mostly created with the help of narrative or literary techniques (Kosow, et al., 2008, p. 33).

Another crucial difference between these two approaches concerns the time frame. Quantitative methods usually look into the short-term future, whilst qualitative methods rather address the long term. Quantitative approaches have difficulties in the long term, as their data is increasingly irrelevant for future events, the further away those events are (Kosow, et al., 2008, p. 33).

Let us have a look at our scenarios. They are not based on numerical data analysis nor derived from mathematical models. Instead, they should be seen as narratives that are mainly based on literature techniques. Moreover, the two scenarios describe a future that is relatively far ahead. Hence, both scenarios follow a qualitative scenario style. Therefore, when looking at the main schools of scenario planning, the one that follows most closely the qualitative style should be of highest interest for this paper.

4.2 Cross-Impact Analysis Approach

Theodore Gordon, one of the most famous futurists, and *Olaf Helmer*, a logician and futurist, first developed the cross-impact analysis in 1966. Essentially, “the cross-impact analysis method is an analytical approach to the probabilities of an item in a forecasted set” (Gordon (1), 1994, p. 4). The term cross-impact refers to the interrelationships between events that are expected to play an important role in the scenarios, and to developments in all kinds of external fields, such as the scientific, political or economic field. Since this quantitative approach aims at estimating probabilities of the occurrence of events, it uses a mathematical model. Its strength is that it gives clear ideas about the likelihood of an event and whether this event x is likely to affect an event y . However, if insufficient, or no data at all is available, the cross-impact analysis approach cannot be used.

4.3 Trend-Impact Analysis Approach

In the 1970s, when scenario planning further advanced, *Theodore Gordon* developed the trend-impact analysis approach. In essence, this approach bases its analysis on quantitative, historical data in order to explore the expectations about future trends. The model can include whatever variables the creators decide on, whether they are political, social or economic, and then uses available data from the past to analyse consequences of the selected trends in the future (Gordon (2), 1994). The strength of this approach is that the scenario creator needs to specify the variables that will make a difference for the future. By doing so, the analysis will give point estimates of each variable, concerning the “[...] probability of occurrence and their importance” (Huss et al., 1987, p. 23). However, it has also been argued that this strength needs to be seen as a disadvantage at the same time. The main weakness is that the moment the creator specifies the variables, he automatically excludes other variables that might also have an impact: “the list of events is almost certainly incomplete.” (Gordon (2), 1994, p. 7). This is a weakness because “[...] it does not evaluate possible impacts which the events may have on each other.” (Huss et al., 1987).

4.4 Intuitive-Logics Approach

The intuitive-logics approach (IL-approach) gained importance because it was used in the Shell example in 1973. As the name already tells, it uses intuition, logic and plausibility to investigate influencing chains of events and create scenarios of the future. The approach presupposes that scenarios must be based on relationships between political, economic, social and technological environmental factors and thus avoids scenarios that are products of linear, unilateral constructions. Therefore, the variables used in this approach are mainly qualitative (Huss et al., 1987).

Creating a qualitative scenario requires an excellent understanding of external, environmental factors and the capability to logically interpret the interrelationships between them. It is argued that the intuition-logics approach is most valuable in situations of extreme uncertainty (Wayland, 2017). Whilst analytical approaches often fail when accompanied by too high uncertainty, as no exact numbers and figures can be given, the IL-approach uses logical reasoning to investigate the wide range of possible scenarios. Another advantage of qualitative approaches like the intuitive-logics approach is that they are capable of creating scenarios that still lie far ahead in the future. Looking at the two scenarios that will be evaluated in this paper, we notice that both examine the relationships between external, environmental factors, based on intuition, whilst using logic to compose a consistent and coherent narrative. Therefore, we can conclude that the IL-approach has been used in our scenarios. Hence, the assessment framework that this paper is going to develop needs to be applicable to scenarios of the IL-approach.

The IL-approach has been criticised by arguing “[...] it is difficult to check the validity of the particular approach adopted from a scientific point of view” (Mietzner et al., 2004, p. 53). It uses intuition and logics, which cannot be validated by the application of mathematical models. Other scientific approaches need to be used to assess the validity or quality of an intuitive-logics approach. This is where this paper comes into play.

5. Criteria for Scenario Assessment

As we need to develop an own framework to assess the two scenarios, we first synthesize the various criteria that have been proposed for qualitative scenario assessments. We classify the suggested criteria into three categories, depending on whether the criterion would be capable of assessing the quality of the two scenarios. The three categories are: 1) Accept, 2) Reject, 3) Modify.

5.1 Chermack’s Criteria Set

Thomas Chermack (2006) suggested a set of criteria for scenario assessment by reintroducing ‘Pink’s Six Senses’. In his book *‘A Whole New Mind’* (2006), the American author Daniel Pink explains why the future of successful businesses belongs to those who use intuitive and creative logic, instead of solely relying on analytical procedures. Pink introduces ‘six senses’ that would aid in achieving such success. Chermack proposes to directly use these six senses as an assessment framework for scenarios. They are: 1) ‘design’, 2) ‘story’, 3) ‘symphony’, 4) ‘empathy’, 5) ‘play’, 6) ‘meaning’. It is important to note that these six senses, as well as Chermack’s reintroduction, are developed in the business context. Because our two scenarios are beyond the business sector, we now look at each criterion individually.

1) ‘Design’

Design is of importance as it functions as the subtle but crucial factor that decides whether the consumer buys the product or not. Taking cars as an example, it is understood as the most basic condition that all cars reliably drive. When buying a new car, we assume that all have the same basic conditions, so whether one buys car A or car B greatly depends on the design of both cars. Using this logic for assessing scenarios, all scenarios have the same basic purpose: creating a possible future from a present perspective. Now, whether scenario A should be seen as preferable to scenario B depends on the design of both scenarios. Therefore, Chermack argues that a good scenario needs to have a good design, including memorable and impressive phrases (Chermack, 2006). Although an impeccable design might increase the publications and popularity of such scenario, I am arguing that the scenario’s likelihood and plausibility will not simultaneously increase. The criterion ‘design’ could only be included in a quality assessment if we certainly know that the compared scenarios

show equally high quality. In such case, whether scenario A is preferred to scenario B really depends on the design. This paper, however, aims at analyzing the quality of two scenarios, whilst assuming that their qualities are equally high would be erroneous. Therefore, we reject the criterion design for scenario assessment.

2) ‘Story’

It is commonly accepted that people pay more attention and are more likely to remember information if it is conveyed in the form of a story. In scenario planning, storytelling also is a crucial factor, maybe even the most basic foundation. According to Chermack (2006), three criteria need to be satisfied in order to compose a good story: it needs to be relevant, challenging and plausible. Relevant means that the story needs to be of importance for the receiver. Challenging is related to the introduction of new ideas and insights about the future, instead of simply repeating already popular storylines. The plausibility aspect counters the challenging aspect, as there should be a balance between the required novelty of a story and its possibility. Plausibility restricts stories in the sense that they need to be realistic and should not be carried away by the creativity and imagination of its creator. Since storytelling plays a decisive role in scenario planning, the criterion story needs to be included in a scenario assessment. Additionally, it consists of three sub-criteria, which makes an analysis with this criterion more sophisticated and profound. However, I am arguing that plausibility is too important to be treated solely as a sub-criterion. As further research will show, the notion of plausibility will come back later in this paper and will be incorporated in a separate criterion. Therefore, the criterion story is accepted, however, the sub-criterion plausibility is taken out.

3) ‘Symphony’

In our context, symphony is seen as an equivalent for systematic thinking, which examines whether the single pieces of the scenario are well put together in order to create a firm, consistent picture. Systematic thinking is important in scenario planning, as a scenario is basically a combination of different events and trends in the future. Hence, a scenario scores high on the symphony criterion if it “form[s] a logical whole in which the various elements and their relationships can be seen” (Chermack, 2006, p. 30). Since without systematic thinking, each scenario becomes just a random collection of single events that are not well connected, a qualitatively high scenario should fulfill the symphony criterion. Therefore, the criterion symphony is included in the assessment framework, however, it is placed in the category modify, as another aspect will be added to it later on.

4) ‘Empathy’

Empathy describes the capability to imagine yourself in the position of another person, comprehending the emotions and feelings of that person. In scenarios, empathy might be required, as readers have to be able to imagine themselves or others in a position in which they are not in yet. Chermack goes as far as stating that

“[e]mpathy may embody the crux of scenario planning” (Chermack, 2006, p. 30), as it makes it more likely for the scenario to be used by the managers of a given business. However, this criterion is difficult to incorporate, as Chermack does not explain how to assess whether a scenario is capable of providing much empathy or not. Therefore, this paper rejects the criterion empathy.

5) ‘Play’

The term play emphasises the importance of having enough room for playful speculations within each scenario. A scenario should leave space for “creative wondering or additional speculative thinking” (Chermack, 2006, p. 31). Applying this criterion would hardly make sense, as by definition, scenarios are just speculations about the future and hence leave plenty of room for further wondering. Also our two scenarios are the product of speculative thinking, so one would have problems finding arguments against the fact that they leave plenty room for creative wondering. Therefore, the criterion play is rejected.

6) ‘Meaning’

The last criterion straightforwardly relates to the meaning of each scenario. Chermack states that scenarios are capable of making meaning out of a complex set of variables that seem related. Undoubtedly, meaning has to be existent in every valuable scenario, however, Chermack does not explicitly say how meaning can be evaluated. With no specific guideline on how to assess ‘meaning’ in a scenario, it is difficult to incorporate the criterion. Whether or not a scenario is meaningful may depend on the subjective opinion of the evaluator. The already introduced criterion of ‘story’ already takes on the topic of meaning in the sense that it examines whether the scenario is relevant for the reader. With relevance comes meaning and hence the criterion meaning seems to be redundant, if we already consider the relevance of a scenario. Therefore, the criterion meaning is rejected.

5.2 Staley’s Criteria Set

David Staley, an American professor with expertise in the field of the humanities, has proposed another criteria set. In his book *‘History and Future: Using Historical Thinking to Imagine the Future’* (2007), he introduces five criteria that need to be fulfilled in order to make a scenario valid, or in other words, to examine whether the scenario is of high quality. The criteria are: 1) ‘futuribility’, 2) ‘completeness’, 3) ‘consistency’, 4) ‘breadth’ and 5) ‘utility’. For each criterion, he raises a couple of questions that should be answered in order to assess the quality of a scenario. In the following paragraphs we discuss and categorize each criterion.

1) ‘Futuribility’

- Is the scenario built from a legitimate evidentiary base?
- Does the scenario balance hard trends and soft trends?
- Is the scenario about a real space? Is it realistic?

Futuribility assesses whether a given scenario describes a realistic future. The first question investigates the evidence that is used to create a scenario, whilst a qualitatively high scenario should be built from strong evidence. Secondly, a scenario should balance hard trends and soft trends. Hard trends can be understood as “[...] inevitable consequences of present situations [...]”, whilst “[s]oft trends are those whose effects and implications are not yet certain“ (Staley, 2007, p. 138). The third question tackles the space of a scenario. The term space describes “[...] an abstract conceptual space that gives shape to the future under consideration” (Staley, 2007, p. 88). In our case, the space is the change that advanced technologies will bring to human structures. The criterion of futuribility is highly relevant, as it assesses the evidence base of the scenario. Therefore, this criterion is accepted.

2) ‘Completeness’

- Does the scenario explore the full dimensions of the space?
- Does the scenario describe a three-dimensional environment or merely a one-dimensional trend line?
- Does the scenario establish a larger context?

These three questions assess how deep the scenario goes into the overall context. Staley puts emphasis on the importance of considering the entire dimension of a space and not just one trend. Hence, a scenario should explore a three-dimensional eventuality instead of just following a one-dimensional possibility. This means that a qualitatively high scenario is required to consider multiple aspects of just one space, aspects such as the social, economic and political environments that come into play. The establishment of a larger context is important, especially considering that scenarios are created to cope with extreme uncertainty that most likely has far reaching consequences. Although this criterion definitely needs to be discussed in a quality assessment, Staley also illustrates his concerns about this criterion. To assess whether a scenario is complete turns out to be extremely difficult. Staley draws attention to the fact that “[...] our written histories – of both past and future – will always be incomplete” (Staley, 2007, p. 143). This is because a scenario can only be seen as entirely complete if it cannot be argued against it anymore, if it is simply true (Staley, 2007). Since scenarios are created in the present, only the future will expose their degree of completeness. It is important that we are aware of this limitation, when it comes to determining the completeness of a scenario. Nonetheless, even without knowing if a scenario is fully complete, we can assess whether it manages to establish a larger context. If it succeeds in doing so, it should be seen as complete as

conceivable, judging from the present viewpoint. Therefore, this paper accepts the criterion completeness.

3) ‘Consistency’

- Do all the elements in the scenario relate to each other logically?
- Does the scenario contain elements that are extraneous?

As an historian, Staley considers consistency as important, as he explains that also “[h]istorians do not include “everything” when they compose a representation [...]” (Staley, 20017, p. 139). Scenarists should adapt this, as events that do not influence the scenario space should not be given any consideration and thus, should be excluded. Interestingly, this criterion also refers to the logic that is used to relate the individual elements in one scenario. The consistency of a scenario depends on whether it manages to logically connect its individual parts to form a consistent whole. Examining the consistency in a scenario reminds of symphony, discussed by Chermack. It seems like both criteria investigate the same aspect. Therefore, the criterion consistency is modified, in the sense that it is added to the criterion of symphony. For the sake of clarity, we use the term coherence when referring to the combination of symphony and consistency.

4) ‘Breadth’

- Do the scenarios expose underlying assumptions we hold about the future?
- Do scenarios force us to consider implications we had not considered before?
- Do the scenarios promote an extension of our forward-looking peripheral vision?

A scenario should take a wide spectrum into account, not only following one specific trend that is commonly known about the future. Staley states that in scenario planning it is important to create scenarios that “[...] run counter to the “received wisdom” (Staley, 2007, p. 139). As the uncertainty about the future can quickly turn a previously unlikely scenario into a most likely scenario within a couple of years, months or even weeks. Hence, even low-probable scenarios should be created. Breadth investigates whether a created set of scenarios offers a variety of different scenarios. Applying this criterion to the scenario assessment in this paper would be difficult, since the criterion seems to be only applicable to the assessment of a set of scenarios. This paper, however, does not have a set of scenarios, but instead will evaluate two individual scenario. Consequently, the breadth of the set of the scenarios cannot be evaluated. Therefore, this paper rejects the criterion breadth.

5) ‘Utility’

- Is the scenario useful? Does it offer operational success?

This criterion investigates whether a scenario aids in dealing with the uncertainty of the future. Staley stresses that, since accuracy and truthfulness of a scenario is difficult, if not impossible, to determine in the presence, a scenario can even be useful

if it does not become true. As long as it “[...] provide[s] insight into the future – that replaces uncertainty with guarded, provisional proposals – [it] is a useful scenario” (Staley, 2007, p. 140). Doubtlessly, every scenario should be useful, as otherwise the whole purpose of scenario planning becomes unnecessary. However, since accuracy and truthfulness of a scenario cannot be determined, I am arguing that a scenario should be seen as useful if its quality is high. Developing criteria to assess the quality of a scenario will eventually show whether a scenario can be seen as useful or useless. Therefore, the criterion utility is rejected, as usefulness of a scenario should not be seen as a single criterion but rather as the overall conclusion, based on the assessment of the criteria.

5.3 Own Criteria Set

Our literature review on scenario assessment criteria has brought forward four criteria that are adequate to serve as a framework for assessing the quality of the two scenarios. These are: 1) ‘story’, 2) ‘futuribility’, 3) ‘coherence’, and 4) ‘completeness’.

The criteria ‘story’, ‘futuribility’ and ‘completeness’ are taken directly from the reviewed literature, hence their definition is identical to the definition given by its creators (see above, Chermack for ‘story’ and Staley for ‘futuribility’ and ‘completeness’). The criterion ‘coherence’ results from a modification of existing criteria, and hence we give a brief definition of this new criterion, before we use it for the scenario assessment.

‘Coherence’ consists of ‘symphony’, which examines whether systematic thinking has been applied in the scenario creation, and ‘consistency’, which refers to the logic that connects each individual part of the scenario. When applying this criterion, we will look at each of the individual parts of one scenario, while paying very close attention to the way these individual parts are linked together. Additionally, this criterion will examine the logical thinking used. This means, we will identify existing tacit assumptions that run through the scenario implicitly. Once identified, we can evaluate how likely it is that these tacit assumptions could be fulfilled, which eventually lets us draw a conclusion regarding the plausibility of the scenario. For a scenario to fulfill the criterion ‘coherence’, it needs to score high in terms of plausibility.

6. Applying the Criteria to the Two Scenarios

Now, that we have determined our set of criteria, we can apply this framework to both scenarios to assess their quality. Each criterion will be applied firstly to ‘The Useless Mass’ (Harari) and then to ‘The Technophilanthropists’ (Diamandis & Kotler).

6.1 Story

To recall, the ‘story’ criterion consists of two sub-criteria, which are relevance and challenge. Relevance means that the scenario needs to be important for the reader. The sub-criterion challenge is fulfilled if the scenario introduces an original storyline, including new ideas and insights.

‘The Useless Mass’ (Harari)

Let us firstly look at this scenario in terms of relevance. We can conclude that the scenario is highly relevant to every reader, as the creation of a useless mass would affect most individuals, regardless of their social, political or economic situation. The useless mass does not only comprise people that are positioned at the lower end of the economic scale, such as taxi drivers, but also professions that are currently still viewed as highly prestigious, such as doctors or teachers (Harari, 2016). Hence, the scenarios would negatively affect the wide majority of individuals and most likely the reader himself. Even if the reader might not be concerned about his personal worsening, as he might belong to the tiny elite, the scenario would still be highly relevant for this individual. An establishment of two classes would force everyone to reconsider social, political and economic institutions and regulations that are currently in power. So even if the useless class might not be of direct and personal relevance for the reader, the redesign of human structures should be.

The second sub-criterion is challenge. Common sense tells us that the emergence of a useless class would pose a substantial challenge to humankind. However, in our context, a scenario is challenging when it does not repeat already known storylines, but introduces new insights. Harari’s scenario circulates around a topic that has been widely discussed in the field of futurology. Many experts, for instance Stephen Hawking or Elon Musk, have expressed their concern about highly advanced technology and its possible adverse implications. Especially the fact that technologies will soon invade large parts of the job market is not a new insight. Therefore, the scenario cannot be seen as very challenging as it does not have an original storyline.

‘The Technophilanthropists’ (Diamandis & Kotler)

‘The Technophilanthropists’ scenario describes a world, in which technology improves the global well-being. Millions of people could benefit from the fruits of philanthropy, enabled through technology. This should be relevant for each and everyone on this planet, which makes the scenario highly relevant. However, we should be sceptical towards the moral aspect of this assumption. Although it is morally correct to care about the well-being of the least advantaged in this world, whether the reader is actually concerned about alleviating the suffering of others might be questionable. It is important to note that the scenario describes future where affluent individuals from the developed world support humanity where it is needed most, i.e. in the developing world. The reader of the story, however, is most likely an individual who is part of a developed country. Despite the moral component to it, the hardship of people in developing countries does not directly concern most readers, which in turns questions the degree to which it is relevant to the reader. Therefore, although the basic message of the scenario is highly relevant for humanity, it might only fully be relevant for the average reader if he/she values morality and appreciates responsibility towards people that are worse off. Interestingly, this is different to Harari’s scenario, as there the reader is most likely part of the useless class and even if not, social and political structures around the reader would change, which would directly affect the reader himself.

Let us consider the challenge aspect. The concept of philanthropy itself cannot be understood as a new idea, since its roots reach far back in time. Already in the medieval era, Christian charities supported the disadvantaged members of the society (Brodman, 2009). However, what should be seen as original is the combination of philanthropy and advanced technology. The notion of philanthropy might have been around for decades or even centuries, but describing a scenario, in which philanthropy puts an end to all misery in the world is a new idea. More importantly, the fact that the scenario presents a future, in which abundance and affluence dominate over inequality and economic failure needs to be recognized as a unique standpoint. As mentioned in the introduction, most experts, like Elon Musk or Nick Bostrom, have great concerns about the spread of advanced technology. Diamandis and Kotler, however, describe a world that could not be more different from all the other, more critical scenarios. Therefore, we find a relatively high degree of originality in the scenario of ‘The Technophilanthropists’.

6.2 Futuribility

‘Futuribility’ investigates the evidence of the scenario, whether it balances hard and soft trends, and examines if the scenario space is realistic.

‘The Useless Mass’ (Harari)

First of all, let us look at the evidence Harari uses in his scenario. Harari refers to a study, conducted by two Oxford researchers, who investigated the ‘Future of Employment’ in the US job market. Their conclusion was that “[...] around 47% of total US employment is in the high risk category [of becoming unemployed]” (Frey & Osborne, 2015, p. 268). Although this study supports the assumption that highly advanced technology will distort the current job market, it is important to note that this is the only evidence that is based on a scientific analysis. All other evidence that is used in the scenario are examples of the past that argue in favour of Harari’s scenario. One such example is the computer ‘Deep Blue’, which defeated the world chess champion Garry Kasparov in a chess match (Harari, 2016, p.372). Harari uses this as evidence to show that even very complex tasks can be better performed by technologies than humans.

This leads us to the balance of hard and soft trends. Interestingly, Harari only uses one hard trend, which is the study on the ‘Future of Employment’ in the US. This is seen as a hard trend, as it shows that large unemployment will be an inevitable consequence of technology in the job market, if our technological development proceeds in the way we expect presently. Other than that, Harari uses soft trends that come in the form of examples, like the one of Deep Blue. Examples might help to convince the reader, but the fact that a robot can win a match of chess does not expose an inevitable consequence. If anything, it gives room for further speculations, which is exactly what soft trends do.

Let us consider the space of the scenario and whether it is realistic. In the two scenarios, the space is the change that advanced technologies would bring to human structures. Harari describes a space, in which extreme social and political inequality will result from the invasion of technology in the job market. When looking at whether this space is realistic, we need to consider Harari’s historical argument that supports his scenario. He claims that, unlike the industrial revolution for instance, the imminent shift in the economic sector will not be capable of producing new jobs for the wide mass. The highly advanced technologies will not only take over physical or mechanic jobs, but also the majority of jobs in the service sector. It is very questionable whether our economic sector is capable of re-adjusting to this kind of rapid technological progress. If the economic sector fails in re-adjusting, then the scenario space, described by Harari, seems very realistic. However, the space can only be seen as fully realistic if it fulfills the premise that people indeed lose their

political significance, once they have lost their economic significance. We will examine the plausibility of this presupposition with the following criterion.

‘The Technophilanthropists’ (Diamandis & Kotler)

Let us look at the evidence used in this scenario. Even though Diamandis and Kotler mainly use examples to back up their scenario, those examples differ from Harari’s examples, as they explicitly show that technophilanthropy already exists. This is the key difference between the evidence of the two scenarios. ‘The Technophilanthropists’ scenario uses numerous examples, emphasising that by 2007 more than 30,000 additional charitable organizations were founded, whilst the number of charitable giving peaked around \$295 billion and that only in the US (Diamandis & Kotler, 2014, p. 139). Other evidence, supporting a philanthropic era ahead of us, is given by the concept of the ‘Giving Pledge’, where Bill Gates and Warren Buffett “[...] ask the nation’s billionaires to give away half their wealth to philanthropic and charitable groups within their lifetime or at the time of their deaths” (Diamandis & Kotler, 2014, p. 139). In 2011, 69 billionaires have signed the ‘Giving Pledge’. As of 2018, this number has increased to a total of 175 pledgers, which shows growing interest in philanthropy among billionaires (The Giving Pledge, 2018).

This brings us to the hard and soft trends. It is important to notice that the scenario makes use of many hard trends, expressed by fixed numbers that show increased support of philanthropy. These numbers are hard trends, as they show us an inevitable expansion of technophilanthropy, if this current development keeps following the trend. Soft trends are also used to describe this rise. The scenario starts by arguing why philanthropy will play a much more important role than ever before. It states that our globalized world is increasingly connected with each other. Consequently, problems or crises that occur on the other side of the globe suddenly become of high relevance for other, seemingly unrelated, parts in the world. To illustrate this, let us consider the example of global warming. Although mainly the industrialized countries cause the degradation of our ecological system, its effects spread over the entire planet, posing a threat for all of humanity. Reasoning that our increasingly globalized world leads to technophilanthropy should be seen as a soft trend, as it is up for speculations whether a closely connected world is reason enough for billionaires to engage in philanthropy. Even though it might be likely, philanthropy cannot be seen as an inevitable consequence of globalization.

The space of the scenario describes a future, in which technophilanthropists improve the well-being of the majority of people in the entire world. Whether this is realistic seems to be closely related to the evidentiary base used. Both, the hard trends, shown by numbers, as well as the soft trends, shown by examples, clearly illustrate an increasing interest in philanthropy, among those who have the means and resources to bring great change. Hence, it seems realistic that the world could turn into a better place, caused by the philanthropy of the rich that profit from advancing technology.

However, this can only be seen as entirely realistic, if the premise that the philanthropy movement gains increasing importance is fulfilled. This is a point to which we will come back with the following criterion.

6.3 Coherence

To recall, the criterion ‘coherence’ is a combination of ‘symphony’ and ‘consistency’. When applying this criterion, we will look at each of the individual parts of one scenario, while paying close attention to the way these individual parts are linked together. This will help us in identifying tacit assumptions that might go by unnoticed. Once identified, we can evaluate how likely these tacit assumptions could be fulfilled, which eventually lets us draw a conclusion regarding the plausibility of the scenario. A scenario needs to score high in plausibility in order to be coherent.

‘The Useless Mass’ (Harari)

Firstly, let us focus on the individual events that Harari considers in his scenario of the useless mass. The first event is the invasion of highly advanced technology into the job market, leading to a mass unemployment. Secondly, since people are not only unemployed but also unemployable (Harari, 2016, p. 379), they are inclined to lose their economic influence. What follows of economic insignificance is political insignificance, as the western political system might stop attaching much value to the useless mass (Harari, 2016). The result of these events is “[...] unprecedented social and political inequality” (Harari, 2016, p. 376), as wealth and power are likely to be distributed only among the few billionaires who own the advanced technologies.

Now, before looking at the bigger picture, let us have a closer look at the individual events of the scenario and especially, the way they connect to each other. The first event is the only hard trend, stating that highly advanced technologies will invade the human job market and take over many jobs. From this starting point, Harari uses intuition, logic and examples in order to further explore potential implications of this trend line. The second event, shown as a direct implication of the technology invasion, is that people lose their economic influence. Let us have a closer look at the connection between the first and second event. Wealthy and powerful people are more likely to shape the economic sector, thus influencing it. Our economic market orientates itself towards maximising profits, hence it rather adapts to the wishes and needs of the wealthy class, or individuals with high purchasing power. It might seem plausible to assume that unemployment goes hand in hand with little economic influence. However, after closer consideration, we notice that there is a tacit assumption that needs to be fulfilled, so that the transition from the first event to the second event is plausible. The tacit assumption is that the economy would need to be capable to continuously grow, while excluding the wide majority of potential consumers. Up to this point in time, the term consumerism is deeply integrated in the

western, capitalistic economies. The economic sector produces for the largest group of possible consumers, always trying to maximise its profits. If the vast majority of people belongs to the useless class and does not have the monetary means to play a role in the economy, it will be hard for the economic sector, if not impossible, to continue to flourish. Therefore, the connection between the first and second event can only be seen as plausible, if the western economy is capable of increasingly growing, whilst excluding the majority of consumers. This would mean a complete shift in the western economic structures.

According to Harari, what follows from the economic insignificance, is that the western political system stops attaching much value to the useless class (Harari, 2016, p. 357). This statement is plausible in the sense that economic power is closely intertwined with political power. Both sectors seem to simultaneously influence each other, whilst wealthy individuals might enjoy more benefits in the political sphere. However, I am extremely sceptical towards the assumption that economic insignificance necessarily leads to political insignificance. Taking such a development for granted implies that the western political system only attaches value to those who play a decisive role in the economy. This is another tacit assumption, which should be considered very critically. To see whether this tacit assumption can be fulfilled, we should look at the political system and its values in the west. Most political systems in the west are different forms of democracy. In its very definition, democracy is understood as a system that is ruled for and by the people, in particular the majority of people. Core values of every democracy are equality and freedom. For instance, every citizen has the right to vote, regardless of his/her social, economic and political situation. With such liberal core values in place, a western democracy would not just stop attaching political value to its citizens, especially if it is those citizens that rule. Thus, even if most people lose their economic significance, the very idea of democracy would fight against depriving this majority of people from their political rights. Therefore, the tacit assumption is highly unlikely to be fulfilled, which means that the connection between the second and third event of the scenario is implausible.

The last event of the scenario is that extreme social and political inequality emerges. For the sake of argumentation, let us assume that a useless class emerges and their economic insignificance indeed leads to a political lack of influence. Following this train of thoughts, it is hard to argue against the fact that extreme inequality would be very likely to occur. Thus, the fourth event logically follows from the third event of the scenario, however, only if all tacit assumptions that we exposed can be fulfilled. As we have seen, the tacit assumptions that *1. The economy is capable of flourishing without most consumers*, and *2. A democracy would stop attaching political value to economically insignificant people*, needs to be objected. Therefore, the scenario of the useless class should be seen as incomplete in terms of 'coherence'.

‘The Technophilanthropists’ (Diamandis & Kotler)

Let us again start by considering the individual events in ‘The Technophilanthropists’ scenario. It also consists of three events, however, the individual parts of the scenario do not seem to follow a chain of events, like Harari’s scenario does. Instead, they are logically connected in a different way. The three main events are 1) ‘The Robber Barons’, 2) ‘The New Breed’, and 3) ‘How Many and How Much?’

The first event, ‘The Robber Barons’, goes into the history of philanthropy, bringing in well-known names like John Rockefeller or Cornelius Vanderbilt. This event is important, as it makes clear why the concept of philanthropy plays such a crucial role in a nation's development. The scenario explains that “[i]n less than seventy years, they [the philanthropists] turned America from an agricultural nation into an industrial powerhouse” (Diamandis & Kotler, 2014, p. 133). By emphasising how important philanthropy was for the development of America, an affluent and powerful country, the first event sets a strong foundation for the following events of the scenario.

The second event, ‘The New Breed’, describes the new philanthropists, the so-called technophilanthropists, while putting the concept of philanthropy into the context of our modern world. It illustrates two key differences between the old robber barons and the new breed, implying that these differences are reason for philanthropy to flourish in the future. The first difference is due to our globalized world. Back in time, “[t]he robber barons worked in a world that was local and linear” (Diamandis, & Kotler, 2014, p. 134). Misery and poverty in other parts of the world were of no concern for the rich upper class. But globalization has changed the world into a closely connected unity. Nowadays, the misery of people in places far away is not only known but also widely discussed. The second key difference, and more importantly according to Diamandis and Kotler, is that nowadays billionaires are much younger than in the past. Due to globalization and advanced technology, “[...] many of the technophilanthropists were billionaires before the age of thirty-five, and they turned to philanthropy right afterward” (Diamandis & Kotler, 2014, p.137). To assume that a billionaire in his mid-thirties is more likely to devote his time and resources to new projects, instead of simply retiring for the next 40-50 years seems plausible. The second event of the scenario logically follows the first event, as it takes up the concept of philanthropy and puts it into the context of the current world. It strongly supports the statement that philanthropy will flourish in the upcoming years. However, also here we can identify a tacit assumption that needs to be fulfilled. Although the concept of philanthropy itself is highly valuable, whether billionaires are indeed willing to pursue this selfless path is very questionable. This, however, is not a question that the scenario takes on. Instead it takes for granted that most billionaires have the intrinsic motivation to engage in philanthropy, offering their own personal resources to the whole world. It is important to note, that if this assumption turns out to be incorrect and modern billionaires do not have any interest in philanthropy at all, the whole scenario falls apart.

The third event, ‘How Many and How Much?’, continues where the second event stops. It proceeds by arguing why technophilanthropists are on their rise. It seems like Diamandis and Kotler recognize the danger that comes with the uncertain tacit assumption and react by including the third event in the scenario. They strengthen the tacit assumption by giving examples, like the already mentioned ‘Giving Pledge’ program that unites billionaires and their resources to do good in the world or the fact that there has been an increasing interest in financially supporting charities throughout the last years (Diamandis & Kotler, 2014, p.139). The third event of the scenario connects well with the second one, as it convinces to accept the tacit assumption. Therefore, ‘The Technophilanthropists’ scenario should be seen as complete, in terms of ‘coherence’.

6.4 Completeness

The criterion ‘completeness’ examines whether a scenario extends a single trend line and puts it into a larger context. The criterion is very straightforward, as a scenario is qualitatively high, if it describes a multidimensional environment, instead of just a single trend.

‘The Useless Mass’ (Harari)

In his scenario, Harari starts off with the single trend line that describes the invasion of advanced technologies in the job market. Then, Harari develops different events in the scenario, all taking into account different aspects of human structures, such as the economic, political and eventually social implications. The scenario is composed of intuition, reasoning and examples, whilst it hardly uses fixed numbers. This gives Harari more creative room, allowing the scenario to extend the scope into several directions, since it is not bound to numerical data. Harari makes use of this creative room and discusses a multidimensional environment, in which the social, economic and political implications of the spread of advanced technologies are considered. Hence, this scenario starts with a single trend line and puts it into a larger context. In terms of ‘completeness’, the scenario seems to explore the full dimension of the scenario scope and should therefore be seen as complete as possible.

‘The Technophilanthropists’ (Diamandis & Kotler)

This scenario establishes a larger context in the sense that it explores one eventuality of how the world could become a better place in the future, caused by highly advanced technologies. All three parts of the scenario focus on the concept of philanthropy. The first event explains why philanthropy is of importance. The second event puts philanthropy into the context of our modern world, whilst the third event gives further evidence that supports this trend line. However, the scenario fails in

putting this one trend line of technophilanthropy into a larger context. A world full of abundance would most definitely have social, economic and political implications, however, the scenario does not explore these. Instead, it dedicates every individual event to the single trend line, describing technophilanthropists. In terms of ‘completeness’ this is problematic, since the scenario lacks a discussion on possible implications technophilanthropists would have on a multidimensional environment.

7. Discussion – Comparing the Two Scenarios

Applying our set of criteria to both scenarios helped us analyse their strengths and weaknesses. This paper will now put the findings in direct comparison to assess which of the two scenarios can be seen as qualitatively higher.

7.1 The Criterion ‘Story’

Harari’s scenario scored high in terms of relevance, as most readers definitely belong to the useless class and thus are directly concerned by it. In terms of challenge, the scenario fails in providing new insights about potential implications of the spread of advanced technologies.

Unquestionably, the concept of philanthropy is of high relevance, however, it might not directly concern the reader himself. Thus, one could argue that the scenario of Diamandis and Kotler is less relevant compared to Harari’s scenario. In terms of challenge, ‘The Technophilanthropists’ scenario differs from other ideas, as it introduces a future in which technological progress brings abundance for the majority of people on our planet. Although the analysis clarified that the concept of philanthropy itself is not a new idea, a version in which this concept can be used to lower global inequality is original.

When comparing the two scenarios in terms of ‘story’, we can conclude that ‘The Useless Class’ scenario scores high in relevance, but low in challenge, whilst ‘The Technophilanthropists’ scenario can be questioned in relevance but scores comparatively high in challenge. Both scenarios seem to fulfill one of the two sub-criteria, whilst neglecting the second one. This suggests that both scenarios score equally high in quality in terms of the criterion ‘story’.

7.2 The Criterion ‘Futuribility’

When examining the evidentiary base of Harari’s scenario, we found that he mainly used examples and analogies to support his scenario. He included only one academic study, which showed that the US job market will soon experience unemployment due to advanced technologies. This was also the only hard trend in the scenario, while all

other evidence was based on soft trends, which are very uncertain in their implications. Thus, Harari's scenario does not find an adequate balance between soft and hard trends. Looking at the scenario space, we can conclude that the space is realistic, as an emergence of an unemployed majority is likely to lead to social and political riots. In summary, we conclude that the evidentiary base is too weak due to the imbalance of hard and soft trends, however, the scenario space is realistic.

The evidentiary base of 'The Technophilanthropists' scenario contains several hard trends, whose implications are rather certain, as well as soft trends with speculative implications. Combining numbers and reasoning, both supporting the claim that technophilanthropists are on the rise, finds a good balance between hard and soft trends. The scenario space is realistic, as it not only shows that philanthropy is crucial for development, but also finds reason to assume that it is currently gaining importance.

Comparing the two scenarios in terms of 'futuribility' suggests that 'The Useless Class' scenario does not manage to balance hard and soft trends, whilst 'The Technophilanthropists' scenario finds a very good balance. Therefore, this paper argues that the evidentiary base of 'The Technophilanthropists' scenario is qualitatively higher than the evidence of 'The Useless Class' scenario. Although the scenario space is equally realistic in both scenarios, the evidence is stronger in 'The Technophilanthropists' scenario, which lets us to conclude that 'The Technophilanthropists' scenario is of higher quality in terms of 'futuribility'.

7.3 The Criterion 'Coherence'

The analysis of 'The Useless Class' scenario has identified four events that compose the overall scenario. At first sight, the connection between the individual events might seem likely. However, exposing the tacit assumptions between the first and second event, and the second and third event made us realize that the individual events are not plausibly connected. Even more problematic is the fact that once the first tacit assumption cannot be fulfilled, the rest of the scenario loses its plausibility and thus its likelihood.

The structure of 'The Technophilanthropists' scenario differs from Harari's scenario, as the individual events only indirectly describe a development from the respective preceding part. Unlike 'The Useless Class' scenario, we only detected one tacit assumption that needed to be fulfilled in order to have a plausible scenario. Similar to Harari's scenario, if this tacit assumption is not fulfilled, the entire scenario loses its plausibility and becomes very unlikely. However, the key difference is the last event of 'The Technophilanthropists' scenario, as it takes this danger into account. This increases the plausibility of the scenario, as fulfilling the tacit assumption is now more likely.

Hence, from our comparison we conclude that ‘The Useless Class’ scenario brings along two tacit assumptions that need to be fulfilled to make the scenario plausible, while ‘The Technophilanthropists’ scenario only has one tacit assumption. Additionally, ‘The Technophilanthropists’ scenario seems to take preventive measures and finds further support for this assumption. Therefore, in terms of ‘coherence’, ‘The Technophilanthropists’ scenario is considered as qualitatively higher than ‘The Useless Class’ scenario.

7.4 The Criterion ‘Completeness’

Harari’s scenario starts with the single trend line of the spread of technology in the job market and puts it into a larger context. By considering the social, economic and political implications of this trend line, the scenario describes a multidimensional environment, successfully extending the originally single trend line.

The scenario of Diamandis and Kotler is very explicit about its original trend line, namely the trend of philanthropy caused by advanced technologies. However, the scenario fails in further extending this single trend line, as it does not describe the social, economic and political implications of this trend. Since Diamandis and Kotler do not put the scenario into a larger context, it fails in describing a multidimensional environment.

We find that the scenario of ‘The Useless Class’ explores the social, economic and political implications of the original trend line, whilst ‘The Technophilanthropists’ scenario does not put its single trend line into a larger context. Therefore, in terms of ‘completeness’ ‘The Useless Class’ scenario is seen as qualitatively higher than ‘The Technophilanthropists’ scenario.

8. Conclusions

Our world is going through constant change, bringing high levels of uncertainty into our lives. Highly advanced technologies substantially contribute to increasing uncertainty in our human structures, including the social, economic and political spheres. Scenario planning has emerged as an attempt to lower extreme uncertainty by developing possible scenarios of the future. Prominent examples are the scenario of ‘The Useless Class’, written by Harari, and the scenario of ‘The Technophilanthropists’, written by Diamandis and Kotler. Starting from the same departure point, namely the massive impact of highly advanced technologies on human society, they come to contradicting end points. Consequently, this paper reviewed the literature about the evaluation of qualitative scenarios, and developed an own set of criteria for scenario assessment in order to answer the question:

Which of the two scenarios should be seen as the qualitatively higher scenario, based on the created set of criteria?

The set of criteria consists of 1) ‘story’, 2) ‘futuribility’, 3) ‘coherence’, and 4) ‘completeness’. Applying these criteria gave us the possibility to critically discuss the quality of both scenarios, based on an understanding of their strengths and weaknesses in relation to each criterion.

Let us first have a look at the strengths of ‘The Useless Class’ scenario. This scenario fulfills one of the two sub-criteria of the criterion ‘story’, as it is highly relevant for the reader, however it fails in introducing novel insights. It scores high in terms of completeness, as it considers social, economic and political implications and thus manages to create a multidimensional context. On the downside, it does not fulfill the criterion ‘futuribility’, as the evidentiary base mostly consists of soft trends that fail in providing sufficiently convincing support for the scenario. The criterion ‘coherence’ also exposes a weakness in ‘The Useless Class’ scenario. The analysis has identified two tacit assumptions that have to be fulfilled so that the individual parts can be plausibly connected to each other and the overall scenario can be seen as likely. We argue that it is rather unlikely that these tacit assumptions can be fulfilled. Therefore, we can conclude that ‘The Useless Class’ scenario meets the full requirements of only one out of four criteria.

‘The Technophilanthropists’ scenario fulfills one of the two sub-criteria of ‘story’, as it introduces a new, original insight, but shows some weakness in terms of relevance for the reader. The scenario meets the requirements of the criterion ‘futuribility’, as it balances hard and soft trends and describes a very realistic scenario space. It also scores high in terms of ‘coherence’. Although the analysis could identify one tacit assumption that needs to be fulfilled so that the scenario is likely, the scenario seems to be aware of this and delivers further support that gives reason to believe that the tacit assumption can be fulfilled. The weakness of ‘The Technophilanthropy’ scenario is that it does not fulfill the criterion ‘completeness’, as it fails in generating a multidimensional environment, since it does not discuss possible social, economic or political implications. Therefore, we can conclude that ‘The Technophilanthropists’ scenario meets the full requirements of two out of four criteria.

Hence, we can draw the final conclusion and answer this paper’s question by stating:

‘The Technophilanthropists’ scenario should be seen as qualitatively higher than ‘The Useless Class’ scenario, based on the created set of criteria.

Lastly, let us consider the strengths and weaknesses of our analysis. The greatest strength is that it offers a generic framework that can be applied to qualitative scenarios in order to assess their quality. As argued above, such a framework is non-existent in the scenario planning theory and thus gives a tool that can be used beyond the specific scenarios of this paper. As shown in this paper, the set of criteria is

capable of assessing a qualitative scenario and concludes with a clear statement about a scenario's quality.

The weakness of the assessment framework is that the tension between the individual criteria is not taken into consideration. It is assumed that each individual criterion carries as much value as the other one. A ranking or weighing of the criteria could have helped in clarifying whether one criterion might be more important than another criterion. For example, one could argue that coherence should be considered as much more important than completeness, as a qualitatively high scenario needs to be capable of fulfilling all its tacit assumptions, as its likelihood depends on it. Even if a scenario manages to take every possible environmental implication into account, if the scenario is not likely, then its quality is low. Also, the assessment framework does not consider the relationships between the individual criteria. Taking up the same example, it could be that if a scenario scores high in completeness, it automatically cannot score high in coherence. Reason for this could be that the more environmental influences are considered by the scenario, the less it is capable to plausibly connect all individual events, simply because the overall scenario is much more complex. Therefore, the main weakness of this assessment framework is that it lacks an interpretation of the tensions that emerge between the individual criteria. When identified, these tensions could help in creating an assessment framework that is more profound and accurate, as scoring high in one criterion would not influence the score in another criterion.

Even though we could identify limitations for this paper, it has offered an approach to analyse the quality of two very popular scenarios, both describing contrasting worlds that are shaped by the spread of highly advanced technologies. Thinking about the quality of the two scenarios gives us the chance to estimate the likelihood of either scenario. A strong avoidance society benefits from this, as assessing the quality of the scenarios lowers, to some degree, the extreme uncertainty that humanity is facing.

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