Automation, labor and basic income - What needs to be done?

A techno-anthropological examination of labor and basic income

Aalborg University Department of Planning

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Executive summary:

Denne rapport er et produkt af samarbejdet med BIEN Danmark, i relation til et 9. semesters studenterprojekt. Rapporten omhandler den stigende automatisering på arbejdsmarkedet, og hvilke perspektiver arbejdsløse samt studerende har, på automatiseringsteknologier og de mulige effekter der både kan påvirke arbejde som en beskæftigelse og mennesker som væsener. To workshops udgør grundlaget for de empiriske udsagn hvori, fokus på teknologisk udvikling, automatisering samt basis indkomst, har været bærende temaer. Resultaterne viser, at automatiseringen kan medføre forskydninger i forståelser vedrørende hvad arbejde som begreb indeholder, hvilken rolle mennesker har og får på arbejdsmarkedet samt hvilke påvirkninger basis indkomst kan have på samfundet og dets borgere. Der kan endvidere drages nytte af at inddrage borgere i udformningen af eventuelle tiltag, da bekymringer og forhåbninger som udtrykkes, kan bruges i overvejelserne til eventuelle design.

Introduction

Are we really moving towards a future wherein machines and robots are overtaking human jobs and transform every industrial sector and the structure of labor? There appears to be a consensus, in both the scientific communities but also in states and governments, that the depicted scenario is inevitable and technologies will, to an extent, transform the structure of work and employment (Xu, David & Kim, 2018; Ford, 2015).. Especially the phenomenon of automation, which is greatly linked to the rise in artificial intelligence (AI), are influencing how labor can be arranged and coded. A report by McKinsey & Company (2017) state, that up to 40 % of the combined work hours of all Danes could be replaced by automation technologies (McKinsey & Company, 2017), which would affect both physical and cognitive forms of labor. Furthermore, a report from the World Bank suggested that the advent of robots supporting the industrial sectors would be as high as 2.6 million worldwide, with 1.4 million added just in 2019 (World Bank Group, 2019). It does not simply mean that robots or machines will overtake the current jobs in the society, but it does call for attention amongst policymakers to be aware of the imminent risk of automation and AI and the effects on labor and the economy. Even Germany, a country with a population of 83.52 million people, is acknowledging the conversion of labor from being dependent on humans to being substituted with technology, which has led to the German Federal Ministry of Labour and Social Affairs report: *White Paper - Work 4.0: Reimaging Work* (Federal Ministry Of Labour And Social Affairs, 2017). It acknowledges the looming risks, which proclaim that Germany can face up to 12-15 % of all jobs being overtaken by automation technologies, but it also dismisses the dystopian imagery depicted, by perceiving a future wherein new job types arises out of the technological progress combined with a healthy public debate (Federal Ministry Of Labour And Social Affairs, 2017). The same conclusion is reached in the Danish government's response to Disruption Rådet [red. *The Disruption Council*] and McKinsey & Co's report (Regeringen, 2019). Here, the focus lies on the ability to re-educate citizens and an early focus on technological know-how in primary schools.

There are potential rewards and pitfalls by having technologies replace human labor and it could all depend on how the societal structures and its inhabitants, will incorporate and adapt to the different technologies that might enter the arena. An element that is highly present in the speculations revolving the prospect of technological unemployment is the concept of capital, which is to be perceived as both economic and social. If the coming substitution of human labor with technologies is imminent, then it will inevitably impact the economic situation of several people (Pulkka, 2017). If technologies, which require no salaries, are replacing human labor, those affected could face the risk of unemployment and therefore an unsecured living. In order to sustain the economic structures of today, Pulkka (2017) has suggested the *conservative scenario* which focuses on the importance of having a well-sustained purchasing power. The disruption caused by technologies will presumably impact low-and middle-skilled labor. Those types of jobs will be in danger of being replaced by technologies, which in return influences the affected people's purchasing power (Pulkka, 2017). Some scholars argue, that it is not merely enough just to focus on the labor effects of

technological unemployment, as Peters (2019) has pointed towards the current societal structure that dominates the economic rationale:

"Despite the rapid growth of information services and adoption of new intelligent technologies we still inhabit an industrial landscape based on industrial attitudes, defined through industrial ontologies and subjectivities." (Peters, 2019. p.2)

As the common understanding of wealth distribution is related to the classical industrial attitude, where growth is perceived as fundamental for sustaining and evolving the economic markets and some places help finance welfare systems, modern societies are now submersed into digital economies and bureaucracy (Peters, 2019). If the, perhaps, ominous prediction which surrounds the phenomenon of technological unemployment becomes a reality, wherein technology creates more problems than it solves, there is arguably a need for having policies that contain effective measures to prevent those ill-warning predictions.

The relevance for exploring how private companies and public sectors, ordinary people, and industries as a whole, are perceiving and reacting to the phenomenon of technological progress and unemployment is of a possible great matter, as it can reflect the current state of concerns and affairs. Furthermore, have scholars primarily contemplated the emerging issues from within their own scientific or political domain (Widerquist: 2018), although as Karl Widerquist proposes, there is a need for perceiving and exploring these matters from an interdisciplinary perspective (Ibid.). This, in return, can provide the experiments and research with needed transparency (Wehner: 2019), which can inform both policymakers and the general public from an array of scientific perspectives.

As this study is approached from a techno-anthropological perspective, it is intriguing to delve further into the technical and technological issues that both involve possible affected individuals of technological progress, combining aspects that can unfold the common citizens' perceptions of technological and societal changes. By incorporating user-centered methods with a socio-technical understanding, this study attempts to bridge the contemporary and future perception of technological progress in the form of automation together with citizens' concerns revolving around labor and technology.

Universal basic income (UBI) is a proposed economic strategy that has been used as an alternative to the current distribution of wealth. It has also been used in the economic and philosophical literature, where in some cases, it has been presented as a means for dealing with the risk of technological unemployment, which also has led to attention amongst researchers and politicians. There are several conceptions and theoretical approaches within the domain of basic income theory, although, UBI is mostly defined by the notion of an unconditional and sufficient amount for an acceptable living standard which every citizen is entitled to (BIEN; Widerquist, 2018). This study, furthermore, intends to examine how basic income is perceived and what criteria it should have incorporated if the possibility of implementing would surface.

The following sections will cover the main areas of interest central for this study; *technological progress, automation,* and *universal basic income*, by presenting the

historical and contemporary perceptions that represent the concepts, leading to the problem statement for this study.

The 4th industrial revolution

An explanation that has promoted the debate revolving around technologies and their influences on the structural frames on labor and employment is that of technological progress. In order to fathom the importance of technological progress in regards to economic markets and labor, it is arguably of great importance to perceive the historical tendencies that previously have constituted the industrial revolution. As Xu, David & Kim (2018) has depicted (figure 1), technologies and knowledge have transformed the original method of manual labor dating back to the first industrial revolution wherein manual labor and manufacturing was the primary driver for generating value and wealth (Xu, David & Kim: 2018). Today, the landscape has changed, although, the dogma rooted in the 1st industrial revolution still influences the contemporary mindset of workers and entrepreneurs (Xu, David & Kim, 2018).

Period	Transition Period	Energy Resource	Main Technical Achievement	Main Developed Industries	Transport Means
I: 1760-1900	1860-1900	Coal	Steam Engine	Textile, Steel	Train
II: 1900-1960	1940-1960	Oil Electricity	Internal Combustion Engine	Metallurgy, Auto, Machine Building	Train, Car
III: 1960-2000	1980-2000	Nuclear Energy Natural Gas	Computers, Robots	Auto, Chemistry	Car, Plane
IV: 2000-	2000-2010	Green Energies	Internet, 3D Printer, Genetic Engineering	High Tech Industries	Electric Car, Ultra-Fast Train

Figure 1: The four different ages of industrialization and their characteristics (Xu, David & Kim, 2018. p.91)

History has demonstrated the shift in what requirements that is related to each subsequent industrial revolution, beginning with the workers producing goods and products with their physical body in the 1st industrial revolution, whereas the 3rd, and now 4th industrial revolution, become more dependent on knowledge rather than manual physical labor. There are now, due to the fast-paced nature of technological development which proves to happen in an exponential fashion rather than a linear (Xu, David & Kim, 2018), more jobs in the risk of being replaced by automation technologies. Xu, David & Kim (2018) points towards the gradual interconnectivity and rise in machine power combined with emerging AI technology. They argue that technological progress can bring improvements for human life, as long as it is instilled and implemented carefully into the existing markets and labors.

"Leading researchers argue that the fourth industrial revolution will shape the future through its impacts on government and business. People have no control over either technology or the disruption that comes with the fourth industrial revolution. However, we

can predict the opportunities that comes with the fourth industrial revolution: 1) lower barriers between inventors and markets, 2) more active role for the artificial intelligence (AI), 3) integration of different technics and domains (fusion), 4) improved quality of our lives (robotics) and 5) the connected life (Internet)." (Xu, David & Kim, 2018. p.91).

Each of the points refers to existing or coming transformations due to technology and the increasingly digital world, which to some degree, are melting together with the physical world. As new technologies enter the markets and become more widely available, the gap between investors and potential markets are being lessened, since more people can begin to innovate and be creative with the new emerging technologies (e.g. 3-D printing of tissue).
Furthermore, the continuous rise in the effectiveness of AI technology will presumably continue to rise, and thereby, affecting jobs that can be automated or made autonomous. Driverless cars and shipping will maybe effectively remove jobs as drivers or trucking. AI can also be used for improved economic and social calculations, which also might influence numerous jobs. As technologies become more complex and the opportunities become greater for developing new and smarter technologies, a fusion of professions and technological knowledge are likely to happen. This means that different fields will emerge and fuse together into new markets and growth opportunities. Another point made is, that robots and robotic technology are being used as tools for improving human life quality, but as technologies evolve and become customized, there is a potential for robots to be replacing jobs, as they get more complex. Finally, as IoT technologies (Internet of things) continue to make an impact on the global society, there is now, thanks to the internet, a possibility to be connected through multiple devices. (ibid.)
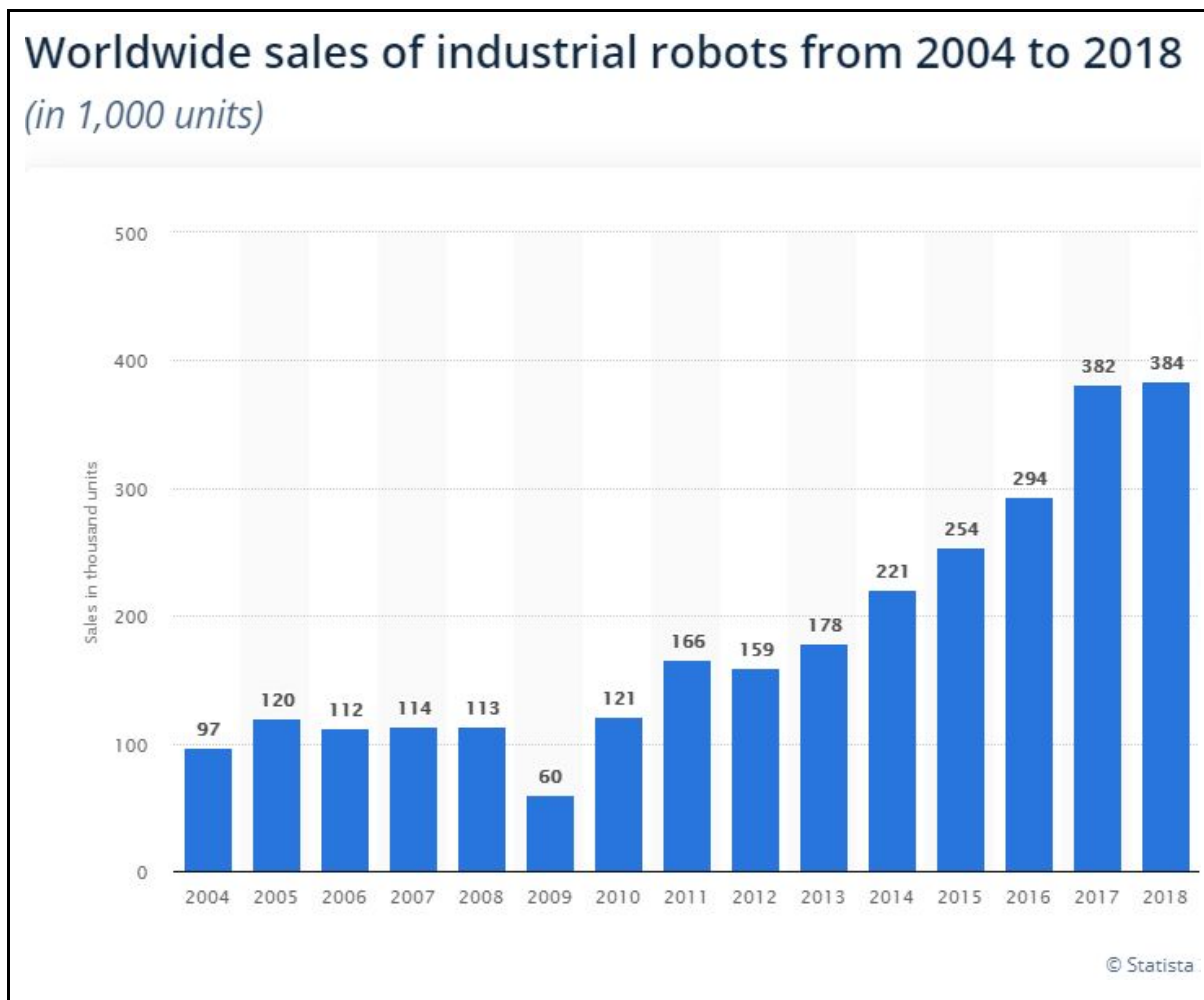
Figure 2: Worldwide sales of industrial robots from 2004-2018 (Statista, 2019)

The 4th industrial revolution is just another factor of explanation in regard to automation and labor. As technologies become installed and adapted to existing types of currently occupied jobs, the risk of human workers becoming obsolete draws closer. Automation can be defined as *the use of machines that operate automatically* and *the use of machines or computers instead of people to do a job, especially in a factory or office* (Cambridge Academic Content Dictionary; Cambridge Business English Dictionary). Signs of the progress of automation can be seen appearing, as the increase in industrial robots has risen significantly since 2009 (figure. 2), which furthermore raises the question of how human beings will be affected if the trend continues in the coming years.

Key issues regarding technological unemployment

Whether the coming technological changes will impact the labor markets or not, there are complications that can arise which need to be addressed. As technologies become perfected and adapted into existing types of labor, societies too must adapt to the disruptive nature of technological progress (Xi, David & Kim, 2018; Ford, 2015). Some scholars are expecting technologies to provide humans with the privilege of freed time, as more jobs become automated and autonomous (Naastepad & Budd, 2019). Others argue, that the problematic

nature of insecurity in relation to employment creates a group of people, which to a certain degree, are forced to accept that certain types of jobs are considered precarious (Standing, 2011). The technological powers can eventually derive people from their livelihood, and as more human labor becomes substituted with machinery, the more people become frustrated and desperate in the search for capital, and as Ford (2015) has demonstrated, more people will have to rely on low-wages from service jobs, although, those jobs (e.g. fast food expedient) will presumably also be affected by robots or robotics (Ford, 2015). Since the current global well-developed societies are constructed in such a way, that economic growth is perceived as the most fundamental element for success and security, citizens in those countries will therefore naturally strive towards the jobs with the highest payouts (White, 2019). This tends to align itself with the conception of what Frank & Cook describes as a *winner takes all* mentality (Ibid.).

Another emerging issue in relation to technological unemployment is the rapid growth in digital economies, which also has proven to replace the traditional perception of growth, which described that having more employees would lead to more wealth (White, 2019). Digital economies and digital monopolies have changed that. Today, companies such as Facebook and Google can now generate and accumulate tremendous amounts of profit on the basis of user-generated data. The data does not stem from their employees, rather it comes from the users of their platforms, which the companies can use more or less without having to pay for it (Zuboff, 2019). This also tends to create fewer jobs, as computational powers require less manpower, and those jobs that will become available, are often placed in offshore locations with minimum wages (White, 2019).

Basic Income

What could the ramifications be, if the current system was to be replaced or reworked into something that would contain policies and measurements for ensuring every human being has the conditions for a decent livelihood. As technological progress and automation are becoming important factors to include in the considerations of possible employability scenarios, scientists and politicians have looked for alternative solutions for the coming generations (Widerquist, 2018). Basic income is a term that comes in many shapes and variants, but it can often be perceived through three distinct political positions; classical liberal, social-democrat, and radical (Lucarelli & Fumagalli: 2008).

The classical liberal view is often associated with the concept of negative income tax, which is referring to a predetermined tax rate. The idea is that everyone below the tax rate, will not be deducted in taxes as the state will cover the margin, but after reaching the determined tax rate, people will have to pay taxes. This will make the less wealthy people avoid having to lose a needed income due to taxation, although, the concept seeks to dismantle the idea of a welfare state, as citizens must pay a fee for institutional services (Ibid.).

The social-democratic approach stems from the recognition, that there are differences and inequality embedded within the social welfare system and labor markets, thus, creating

differences in wages and income. Advocates within the social-democratic tradition perceive basic income as a tool for guaranteeing a minimum income for those below the poverty line, which a basic income guarantee (BIG) would provide, for as long as the persons are considered to be in need of a BIG (Ibid.). This sets itself apart from UBI, which stresses the importance of a universal and unconditional right for an income that can support a basic living standard. It is also defined as the radical proposal, as it incorporates social and ethical values, which represents a humane and solidary perception of equally distributing the economic wealth that is present in societies (Ibid.).

Universal Basic Income

The concept of an income distribution system that will divide the shared economic resources equally, is also known as a Universal Basic Income (UBI) system. By emphasizing the importance of equality, advocates perceive UBI as a fundamental right that the state shall provide for its citizens. UBI can be defined as:

"...a periodic, cash income paid individually to all members of a political community without means test or work requirement. UBI is also commonly understood to be regular, stable in size, and lifelong, although it might be lower for children or higher for people of retirement age. This definition probably reflects the most common usage of the term, but UBI is a contested concept that is used differently in different political contexts and by different people in the same context." (Widerquist, 2018, p.15).

The concept can appear alarming for some, as UBI is to be given unconditionally and without any means-testing, which it also has been criticized for (Wehner, 2019). Advocates for UBI, however, deem it a necessary tool for establishing an equal economic and social policy, as it can support a balance between a flexible personal and work life (Widerquist, 2018). Whether it is beneficial for the national and global economies is perhaps, in relation to UBI, not the element of greatest importance, as morality and ethics are to be considered just as important (Lucarelli & Fumagalli, 2008; Standing, 2019; Widerquist, 2018).

There are multiple layers embedded within the UBI concept. Guy Standing (2019) conceptualizes UBI by describing the core defining elements that constitute the concept. The term *basic* refers to an economic set-point where every recipient would have sufficient funds for a basic living standard. The income should be in the form of *cash* or similar to it, as gift cards or vouchers would be deemed paternalistic since it takes away the individual's own choices. Furthermore, shall the payments be delivered *automatically* and *regularly*. UBI is for the *individual*, which speaks to the notion of a basic human right for each legal citizen of a state. The terms *universal* and *unconditional* refers to the importance of securing a right for an income, that does not require the individual to meet any demands or having to pay back the funds given. (Standing, 2019)

UBI has also gained support from Grassroot organizations, such as BIEN (Basic Income Earth Network), which internationally was founded in 1986 and started out as a European organization but became global; hence earth, in the early 2000s. Its purpose is to promote the debate revolving around UBI for any interested parties or individuals (Ibid.).

"The universal basic income (UBI) movement, simply defined, is a network of advocates for policies of economic distribution taking the form of regular cash transfers distributed uniformly, unconditionally and directly to people, who are neither required to pay the quantity back nor mandated to meet any condition." (Nagler, 2018. p.82)

The UBI movement can be perceived as an opposing ideal to current forms of societal structures, as both modern western neoliberal systems together with welfare systems are considered inadequate since each type of system requires the individual to prove its needs (Nagler, 2018). UBI advocates are also criticizing the inability in current systems to promote equal economic policies that can support each individual, which in fact as Nagler (2018) expresses, is a value found both in liberal and conservative ideals (Nagler, 2018).

The Danish branch of BIEN is the national department of the organization and has the same purpose as its parent organization, which is to inform and promote the public debate in relation to the eventual implementation of UBI. It was officially formed in 2000 (BIEN Denmark) and its primary inspiration, seen from a danish context, came from the book *Oprør fra midten [*red. *Rebellion from the middle]*, which was published in 1978 and is one of the earliest danish publications regarding UBI (Meyer, 1978). This study's focus on the domain of basic income and UBI is a part of the collaboration between the author of this study and BIEN Denmark, transpiring into an examination of perceptions regarding basic income and UBI.

Key issues regarding UBI

The conception of a UBI is at first glance, not a brand new idea as it builds upon the historical agreements, dating back to Louis Vives' (1492–1540) infant ideas regarding welfare, that each individual should be entitled to funds that can support a basic livelihood (Van Parijs, 2017). It has historically also proven to be met with some skepticism, which is why social support and welfare-systems have incorporated means of testing, in order to prevent free-riding or misuse of the benefits given. Opponents of UBI, have in some cases stated, that it is problematic handing out money to persons that have not worked for it, as they have not contributed to the pool of wealth wherefrom it is taken (Ibid.). The discussion often revolves around the concept of labor and work, as the common conception has been that the effort of work should result in some form of payment. But it is perhaps not that simple, as Van Parijs (2017) indicates:

" For those truly concerned about free riding, the main worry about today's situation should not be that some people get away with doing no work, but rather […] that countless people who do a lot of essential work end up with no income of their own." (Van Parijs, 2017. p.102)

The argument made by Parijs is a commonality found across several scholars (Parijs, 2017; Wehner, 2019; Standing, 2019; Widerquist, 2018), as work as a means for sustaining a

decent life should be contested, as the human resources can be productive towards other tasks, such as taking care of the household or caring for children or elderly. Here, the conundrum is of economic and social character, as the capitalistic value of economic growth would correlate with productivity as a means for sustaining the growth. The more people occupied with productive labor, the more economic growth can come in return. Advocates of UBI argue that labor is a phenomenon with many different perceptions, and the individual is free to choose how their labor and work shall be constructed, which UBI could secure and maintain. The problem, as seen by UBI advocates, is that contemporary structures in both the private and public sectors contribute to the unequal sharing of economic growth (Parijs, 2017).

Much of the speculations revolving around UBI are based upon hypothetical discussions (Wehner, 2019; Pulkka, 2017), as the topic is yet to be examined in large scale trials (Wehner, 2019). This tends to appear problematic in regards to the empirical knowledge, which can be used for achieving a holistic and transparent foundation in assessing the possible advantages and disadvantages in a UBI system. Most notable were the two experiments conducted in Finland and Alaska, although, none of them truly examining or adapting a fully UBI perspective as previously described (Ibid.).

Finland had conducted a basic income experiment from 2016 to 2018, which gained a lot of attention from the beginning, as it planned to take up to 100.000 people into account. In the end, it ended out with just 2000 unemployed persons, due to political decisions, which each was given £560 per month. The preliminary findings have shown, that a UBI given to unemployed persons instead of an unemployment insurance benefit, would, to some extent, make the test subjects less stressed and depressed (Standing, 2019), but it has also met criticism for its reduction in scale (Wehner, 2019). The Alaskan project differentiates itself from the Finnish experiment, as it resembles a common dividend scheme (Standing, 2019). Firstly, the payouts to the Alaskan citizens were coming from the state investment fund based upon oil revenues and not by taxes (Wehner, 2019). This was due to the law, stating that the Alaskan natural resources are belonging to the Alaskan people (Van Parijs, 2017). Secondly, it fluctuates in the size of the payouts, as it was not designed to be a UBI scheme. Furthermore, were the payouts given annually and not monthly (Van Parijs, 2017). Lastly, the payouts were not sufficient enough for sustaining a basic livelihood, since its payouts ranged from 2-5% of an average personal income (Wehner, 2019).

Problem formulation

Throughout the aforementioned sections, it has become apparent that there are obstacles and uncertainties related to the technological progress seen in modern societies. It is arguably of great importance to decision-makers and industries to be aware of the possibilities and complications that will present itself by the advent of automation, as the contemporary job markets are exposed to technologies and an increasingly digital structure. Technological unemployment also demands attention, as it, perhaps prematurely, deduces the outcome of the technological progress to a dystopian scenario affected by automation. Furthermore, does the current political and scientific landscape not provide any noteworthy studies or policies that incorporate a citizen-centered perspective, which could contribute to the holistic explanation of how citizens, regardless of their current employment situation, are perceiving the forthcoming changes related to the continuous technological progress. It is also relevant to examine how citizens are perceiving the possibility of implementing basic income as a means for dealing with the possible effects from automation, as previous research on the topic of basic income also seems to lack a citizen-centered perspective, which the methodology of Participatory Design can support in obtain. This has led to the following problem statement, for which this project will undertake as the analytical focus points.

> *Which perceptions do individuals that are currently outside the labor market have in regards to the effects of technological progress and increased automation of labor and what potential effects would basic income have as a means for the substitution of labor due to automation?*

In order to investigate and encapsulate the knowledge, which is needed for answering the aforementioned statement, this study seeks to explore, how individuals that currently are unemployed or studying are perceiving technological progress in regards to labor, and how they interpret the increasing level of automation due to technology. This study also seeks to explore how basic income conceptions are perceived and what criteria should be fulfilled if a basic income model were to be introduced to society.

Involving citizens in the process of creating and exploring empirical data, is in this study a fundamental cornerstone, which in this context stems from two workshops held with participants who currently are unemployed, and with university students from Aalborg University.

It is also worth noting, that this study's contextual frame primarily is placed around a Danish setting with Danish participants as informants. This also means the findings related to the problem statement are context-specific related to perceptions from seven workshop participants, thus, excluding other potential groups of individuals and stakeholders, such as people that are currently employed or decision-makers.

Methods

The methodological choices for this study are designed with the purpose of obtaining empirical qualitative data, that can support the two primary research questions, relating to having common citizens included in the discussion revolving around automation and technological progress. The data corpus for this study consists of material from two workshop sessions, which have been facilitated in cooperation with a member from BIEN Denmark.

Participatory Design

A suggested way of incorporating a user or citizen-centered perspective into a methodological research design is by applying the fundamental principles of Participatory Design (PD). PD stems from the 1970s and 1980s, where scholars sought to include more voices in the decision making and design process related to *information technologies* (Robertson & Simonsen, 2012; Muller & Druin, 2012). By incorporating user-centered or citizen-centered design practices in research or design projects, a perspective on future complications or issues that needs to be attended to or made explicit could then be collected and processed. Robertson & Simonsen (2012) defines PD as:

"A process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective 'reflection-inaction'. The participants typically undertake the two principal roles of users and designers where the designers strive to learn the realities of the users' situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them." (Robertson & Simonsen, 2012. p.2)

By inviting users into the actual research process, the researcher or designer can then physically interact with the informants and attempt to unlock their perspectives on a given matter. This can benefit the research in different ways, as it enables the process of mutual learning for both the informants and the researcher, but it also potentially benefits the different stakeholders of a given subject, which could be decision-makers or the society at large (Robertson & Simonsen, 2012). Perhaps more importantly, can the informants used be carriers of significant knowledge, situated to very specific scenarios or situations, which can be related to the respective informants' expertise or domains of knowledge (ibid.). PD is arguably also tied into the political arena, wherein the rationale for applying PD lies with "...*a commitment to ensuring that the voices of marginalised groups and communities are heard in decision-making processes that will affect them.*" (Robertson & Simonsen, 2012. p.6). This is an appropriate description of what this study seeks to promote, as the processes of automation, and thereby the possibility of job insecurity and unemployment to a certain extent, directly or indirectly affect numerous individuals.

In this study, the inspiration from PD is transferred into the actual methodological design by facilitating workshops that will give ordinary users of technology a voice regarding the technological progress that surrounds and affects the modern societies.

The workshop method is not necessarily reserved for a specific scientific discipline, as it overall can be perceived as multi-functional research or design tool, that can incorporate elements meant for letting the participants engage, communicate and describe their perceptions and understandings of a given subject or theme (Brandt et.al, 2012). By incorporating a PD methodology, knowledge can arguably be generated by e.g. designing and facilitating workshops (Ibid.). The workshops are here linked to the interest of having participants or potential stakeholders engaged in different activities, which in return can help enlighten their views on certain topics and themes. The workshops also support the notion of facilitating and nurturing a *third space*, that shifts the participants' ordinary settings into a convenient laboratory for exploring and describing ideas and thoughts (Muller & Druin, 2012). It also helps bring in *the workers to the design room* (Ibid. p.1132), which this study attempts to in portraying the participants as eligible and valid voices in the societal and political conundrum revolving around automation, technological progress and the possibility of technological unemployment. Furthermore, does the workshop method provide an element of co-creation, as the participants constructs and creates tangible artifacts, which provides a supplement to the eventual audio or/and video recordings (Ibid.).

The workshop design explained

Order and the estimated duration	Activity
0: 5 min.	Presentation
1: 60 min.	Pro & Con - McKinsey & Co conclusions
2: 45 min.	Scenarios with pictures
3: 30 min.	Presentation of basic income and BIEN
4: 60 min.	Design your own basic income

Table 1: Workshop design overview, (Appendix, A)

The workshops carried out for this study were conducted with the same identical workshop design (table 1), as to make sure that the option of comparability was preserved for an eventual later need. The general theme correlated to the research questions, which helped set the tone and environment for the activities planned. The theme was *technological unemployment and automation*, which contained the overall elements for this study, although, basic income still was an important element, which the second part of the workshop was focused on.

Picture 1: Workshop session in progress

The participants

The intended desire was to facilitate two separate workshops with two different types of participants, which would reflect certain areas of interest regarding the problem statement. The first workshop would exclusively have participants that were currently unemployed when the workshops session was taking place, whereas the second workshop would have current students at Aalborg University as participants. A board member from BIEN Denmark was also attending both workshop sessions, as he would present BIEN and what it, as an organization, is working towards. Furthermore, was he also to present basic income concepts and similar perspectives, which had the purpose of serving as knowledge from where the participants could take pointers for the final activities of discussing and designing basic income models. All participants will appear with pseudonyms in this study, as part of a non-disclosure agreement in relation to the workshops.

There were four unemployed persons attending the first workshop, which all was to be considered unemployed when the workshop was held.

Simon - 29 years: Has been unemployed since 2017 and has a master's degree in city planning.

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Earl - 29 years: Has been unemployed since 2018 and has an education as a public school teacher

Toby - 28 years: Has been unemployed for a couple of weeks and has a master's degree in societal economics.

Mimi - 28 years: Has been unemployed since 2017 due to a sick leave caused by PTSD (post-traumatic stress disorder). She has formal primary school education.

Table 2: Participants currently unemployed

The second workshop had three participants, who all currently are studying a master's program at Aalborg University.

Poul - 23 years: Currently at 9th semester and is studying Techno-anthropology

Joe - 23 years: Currently at 9th semester and is studying Techno-anthropology

Eva - 24 years: Currently at 7th semester and is studying Environmental management and sustainability science

Table 3: Participants currently studying

Presentation

The participants were introduced to the workshop activities and the general theme of automation, technological progress, and unemployment. This activity would also serve as a minor icebreaker, since the participants were asked to formally present themselves, their educational background and if being unemployed, for how long a period. They were also asked to tell of any preexisting knowledge on the general theme of the workshop.

Advantages and disadvantages regarding McKinsey & Co conclusions

This activity was designed with the purpose of generating reflections from the participants in relation to possible advantages or disadvantages found in the McKinsey & Company report "*Automatiseringens effekter på det danske arbejdsmarked* [red. *The effects of automation on the Danish labor market*]" (2017). The report contains seven conclusions (table 4) which served as individual statements for the participants to reflect upon.

1 - Existing technology can automate at least one workday during the week for eight out of ten Danes

2 - The progress is first and foremost a possibility for increasing wealth

3 - The automation can drive the productivity and dynamic in all branches but must be approached differently
- *Trade*
- *Industrial*
- *Transport*
- *Business service*

*4 - Employees in every profession must in the future develop new skills*

5 - There is a specific need for more people with advanced digital and analytical skills to pace the progress

6 - There are also other dynamics besides technology that can help drive the employment rate

7 - A group of 250.000.-300,000 employed persons will possibly face a challenge with the transition

Table 4: The seven conclusions from *The effects of automation on the Danish labor market* (2017) (Appendix, B)

They were asked to write down all the advantages and disadvantages they could think of in relation to a given statement on individual post-it notes and were then asked to place them on cardboard for later analysis (picture 2). The participants were also shown tables and figures from the McKinsey & Co report that were used by the researchers for their conclusions (Appendix, B). This was done to provide the participants with the contextual material from where the seven conclusions were stemming.
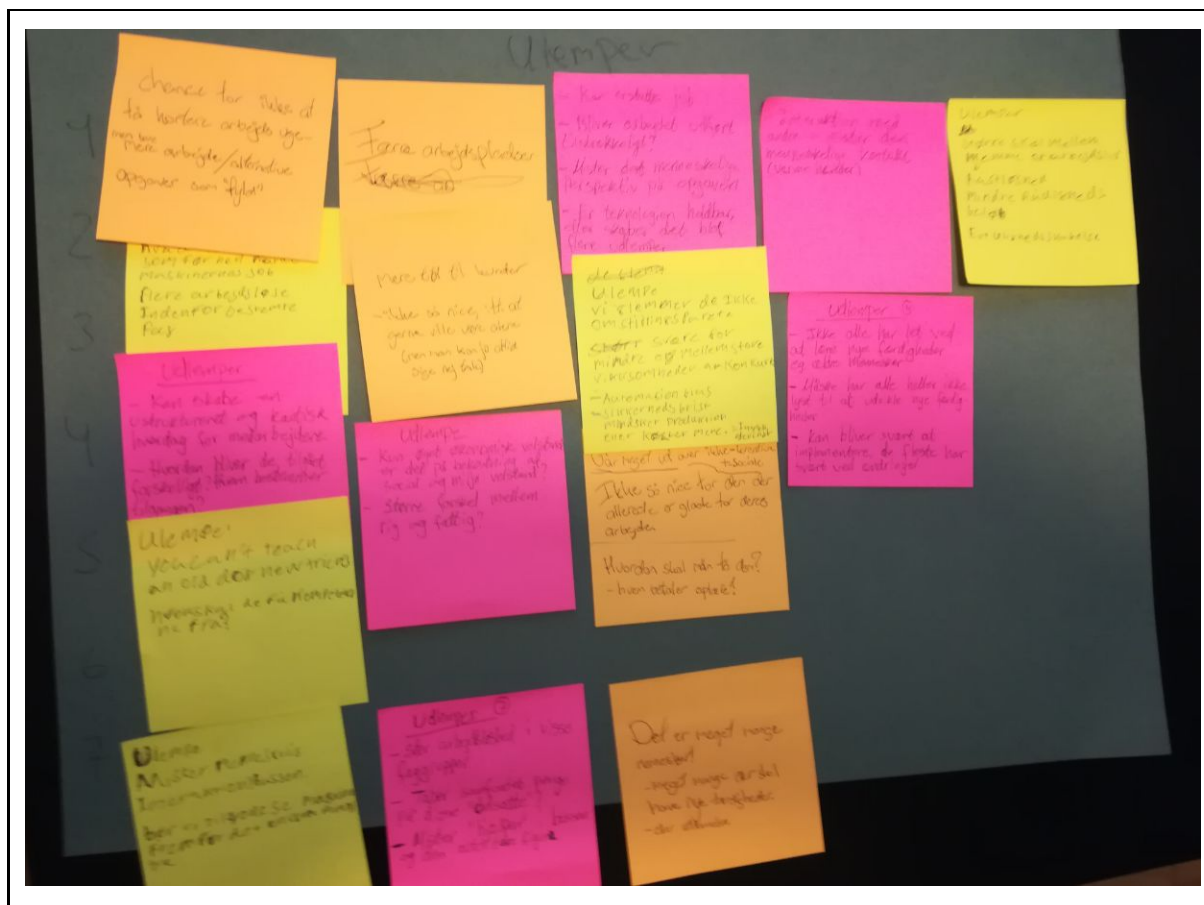
Picture 2: Post-it notes regarding disadvantages from the workshop with students (Appendix, C)

The activity was, unfortunately, taking more time to complete than originally assumed. This meant that an active decision during the first workshop was taken, which then impacted the second workshop, which resulted in the participants skipping conclusion points 5-6.

Scenarios with pictures

The activity was designed with the intention of letting the participants discuss the depicted scenarios (picture 3) that were shown to them. There were five scenarios with related pictures all part of the general theme of *insecure labor and automation*.

Picture 3: Pictures used for activity 2. (Appendix, D)

The five scenarios for the activity were:

1. **Automation and manual labor**: The picture illustrates an Amazon package distribution center where the automation process has affected the human workers' role.
2. **Robotic assistance technology**: The picture illustrates a robot (Moxi) assistant for nurses at hospitals. It is designed to handle manual tasks that do not involve interacting with patients.
3. **Robot teachers in kindergartens**: The pictures illustrate two different robots that share the same purpose of being technologies designed for supporting the kindergarten teachers in China. The robots are not yet meant for substituting the human teacher.
4. **Transportation in different sectors**: The pictures illustrates respectively a driverless bus and automated cargo ships. The pictures are examples of how transportation can and are affected by technological progress.
5. **Self-service in restaurants and supermarkets**: The pictures illustrate respectively self-service stands at McDonald's and self-service checkout machines at a supermarket. The pictures are meant for depicting the aspect of indirect labor in relation to automation.

Each of the five scenarios is accompanied by a description, in order to encircle the predominant circumstances related to the concrete situation. The scenario activity is perceived as a functional approach for debating hypothetical or possible futures, which the participants can use as a fixpoint for their argumentations.

"Scenarios are very little in themselves. Good scenarios are not a detached description of user tasks and actions. They are selective scripts or stories that stage user actions with a future artefact". (Bødker, 2000. p.72)

By incorporating elements that are relatable, for example, McDonald's self-service or driverless vehicles, the participants should initially be able to relate the specific situation or a similar one to something that potentially could affect their daily life or already has. Scenarios can in this context also be applied for provoking or making caricatures of a given technology or situation, which in return can provide the researcher with insights into concerns, expectations, beliefs, etc. (Bødker, 2000).

Presentation of basic income and BIEN

This activity or presentation marks the second part of the workshop, whereas the first part primarily was centered around the concepts such as automation, technological progress, and unemployment, the second part is focused on possible alternatives to a society increasingly affected by the continuous technological progress. Furthermore, was the element of worker protection also introduced, due to the introduction of basic income. Mark, the BIEN member attending the workshops, would initially present his own thoughts on basic income but also introduce the participants for the ideas that have led to UBI, which was the concepts of *negative tax* and *social dividends*. The presentation was followed by a discussion among the participants and Mark, albeit, the second workshop with master students had a relatively small discussion, whereas the unemployed participants at the first workshop had some knowledge regarding basic income as a concept, which led to a lengthier discussion among them.

Design your own basic income

The last activity was for the participants to design a basic income model themselves. The participants were told that there were no limits in regards to the number of eventual requirements that should be met. They could even just write down reasons for why not to implement a basic income model if a participant was against the idea. The participants were given suggestions for what to think of when designing, which included:

- The amount of the basic income and what should it cover
- Should the receiver of the payment meet any criteria in order to be eligible?
  - Any certain social groups only?
  - What age should the receiver be?
- Any ideas on how to finance your model?
- What arguments would there be for implementing exactly your idea?
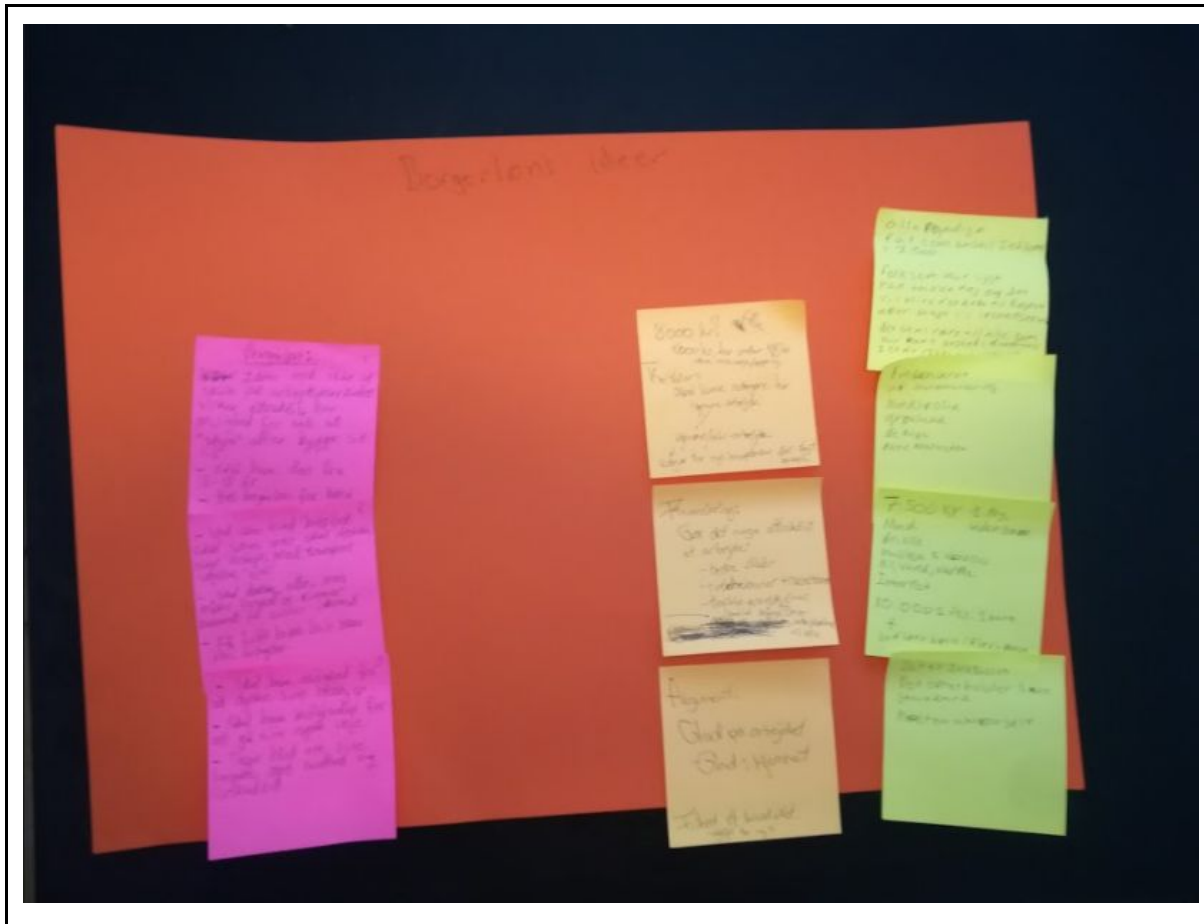
Picture 4: Basic income model designs from the workshop with students (Appendix, C)

Just as activity 2 involved the usage of post-it notes, this activity was similar to it, as the participants were asked to write down their designs and place them on a piece of cardboard (picture 4). These would function as empirical knowledge regarding viable information for the analysis and to BIEN Denmark.

After the last activity, each participant was given 100 danish kroner sponsored by BIEN, as a symbolic gesture for what their organization works towards. The only condition was their participation in a workshop session, although, no conditions should be met in a UBI context (BIEN).

Issues with collecting the data

After the workshops had been conducted, a setback occurred in relation to the audio recordings. It later proved to be a problem with one of the recording devices, which fortunately had recorded all of the sessions but unfortunately, was there only sound in the first 2-4 minutes of the recordings. This setback could potentially have been a major issue, although, the entire workshop with unemployed participants was saved by having recorded with another device, the visual artifacts (cardboards, post-it notes) produced during the activities were still useful for the later analysis. This had an influence on the processing of data for the analysis, as the visual artifacts produced from the second workshop will be the only data represented, whereas the entire first workshop has been transcribed, and

therefore, as the coming analysis only contains extracts from the workshop with unemployed participants.

Analytical method

As an outcome from the workshops, the data set which is derived from the overall data corpus is consisting of a full transcript from the workshop facilitated with individuals currently in unemployment and the post-it notes from both workshops (Appendix, C). These have, with the inspiration from Braun & Clarke's' (2006) *thematic analysis,* been processed several times as for *"identifying, analysing, and reporting patterns (themes) within data"* (Braun & Clarke, 2006, p. 6). The process of extracting meanings and searching for themes within a data set should be considered a careful and iterative process, wherein the researcher, in a structured fashion, decides upon what themes that are deemed predominant in regards to the main focus of the study.

"A theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set [...] Furthermore, the „keyness‟ of a theme is not necessarily dependent on quantifiable measures – but in terms of whether it captures something important in relation to the overall research question." (Ibid. p.10)

This study attempts to encircle and analyze the workshop participants' meanings and beliefs in regards to the future of labor due to the technological effects of automation, but also to explore how basic income, as a societal and political tool, is perceived in relation to automation.

Following the conceptual framework by Braun & Clarke (2006), the process of coding and generating themes should continue to be an ongoing exercise that primarily consists of: *Familiarising yourself with your data, Generating initial codes, Searching for themes, Reviewing themes, Defining and naming themes and Producing the report* (Ibid., p.35). The first iteration of searching for themes produced three themes with related categories (See Figure X), which were constructed through coding and structuring data extracts.

Concerns regarding labor markets and society	Suggestions for adaptability	Advantages and disadvantages of Universal Basic Income
Automation Advantages	The Human Factor	Support
Troubles With automation	Value From Work	Personal Requirements

Consequence of automation	Future Outcome	Role Of Labour
Economic Growth	Education	Role Of Transfer Payments
Corporate Responsibility	Technology Advantages	Freed time
Role Of the Worker	Types of Labour	Citizen salary
Social Safety	Importance Of Work	Lack of Motivation
IT-Security	Helpful Technology	Unemployment
	Role Of Technology	Basic Income
		Basic Income Design

Figure 3: 1st iteration of a thematic map with themes and related categories of codes.

The first iteration of reviewing extracts and codes in regards to finalizing a thematic map contained categories of codes that were containing two or fewer data extracts, which afterward were reviewed in the 2nd iteration in order to reorganize and remove redundant codes and categories. The three themes presented in Figure 3 were also connected to the initial research problems for this study (figure 4), to represent the overall focus and theme of technological progress, automation, and basic income.

How can citizens contribute to the scientific base of knowledge regarding the prophecies related to Industry 4.0 and technological unemployment and what is concerning individuals regarding the automation technologies in an increasingly technical world?

How can a UBI scheme be designed by citizens to coincide with contemporary and future technological progress?

Figure 4: Initial problem statements for this study. This was later changed to the main problem statement after the second iteration of finding patterns and themes.

The second iteration, wherein the primary objective was to reduce and reorganize the categories of codes, also helped reshape or *evolve* (Ibid., p.12) the research question for this study, since the continuous reviewing of extracts related to the different categories of codes produced a thorough understanding of the concrete data material, whereas the first iteration of generating themes aimed for a correlation with the initial problem statement. Furthermore, was the three main themes also renamed in order to reflect the final problem statement for this study (figure 5).

Concerns and hopes for the future of labor	Preparing the human race	Basic income and its attributes
Automation Advantages	The Human Factor	Personal Requirements
Troubles With automation	Value From Work	Role Of Labour
Consequence of automation	Future Outcome	Role Of Transfer Payments
Economic Growth	Education	Lack of Motivation
		Basic Income Design

Figure 5: The final thematic map with relating categories of codes

The theme "*Concerns and hopes for the future of labor*" contains codes such as *Automation Advantages* and *Troubles With automation*, which first and foremost refer to the participants' expectations regarding current and potential effects of technological progress and automation on labor. The theme "*Preparing the human race*" was created since it contains codes, such as *The Human Factor* and *Future Outcome,* which represent the participant's reflections regarding the role of humans in our current system and how it can be affected by technological changes on labor. Finally, the theme "*Basic income and its attributes*" contain categories of codes related to the concept of basic income. Codes such as, *Role Of Transfer Payments* and *Basic Income Design*, refer to the participants' perceptions of the concept and the potential effects on humans and labor that could surface by an eventual implementation.

The extracts used within the analysis appear translated from Danish to English but the originals can be found in Appendix E.

Analysis

Having processed the data material generated from the workshops and constructing appropriate themes relating to the overall research problem of this study, the following sections will seek to answer the problem statement through an analysis of each of the three themes found: *Concerns and hopes for the future of labor, Preparing the human race* and *Basic income and its attributes*. Each of these is reflected in the problem statement:

Which perceptions do individuals that are currently outside the labor market have in regards to the effects of technological progress and increased automation of labor and what potential effects would basic income have as a means for the substitution of labor due to automation?

The focal points for the analysis are to reveal and examine the participants' concerns and hopes for a future that has the possibility of becoming highly affected by the increased usage of automation technologies in relation to labor, which the themes, *"Concerns and hopes for the future of labor"* and *"Preparing the human race",* aims to enlighten. The final part of the problem statement refers to the theme of *Basic income and its attributes*, which surrounds the concept of basic income models and how such a concept if being introduced to society, could affect the human and labor conditions.

Concerns and hopes for the future of labor

What the future might bring is often a great concern for most individuals, businesses or governments, and speculations regarding the impact of automation technologies are frequently appearing in political and economic discussions. The examples from the likes of the McKinsey & Co report (2017), The World Bank groups report (2019) and The former Danish Governments report (2019) indicate the interest from large companies and governments, but it also happens to be those in power, whose actions potentially affect numerous of individuals. By incorporating this notion, the workshop activity revolving around McKinsey & Co's report, *"Automatiseringens effekter på det danske arbejdsmarked"* [red. *The effects of automation on the Danish labor market*] (2017), was designed with the intent of letting the participants reflect upon disadvantages as well as advantages, in regards to a reputable analytical institute's conclusions on the effects of automation on the Danish labor market (figure 6-7). During the workshops, it became apparent that there were unanimous agreements upon what the future potentially could bring, both in regard to positive and negative perceptions by both participant groups.

Figure 6: Example of post-it notes on advantages found in relation to conclusions in "*The effects of automation on the Danish labor market*". The number corresponds to which conclusion.

A similarity shared by almost every participant was the acknowledgment of the possibilities which a shorter working week caused by automation could provide, which notably was perceived to result in reducing stress, as both Simon and Joe wrote, or it could allocate time previously designated for working, as Poul and Toby wrote. The aspect of how an individual plan out and divides its waking hours, both in relation to leisure and work is something Simon touches upon:

Simon: *"The advantages I can think of is less working hours and thus more free time. It will reduce stress and give people a greater opportunity to be with their family and loved ones. It might also give more space to creativity because your brain isn't completely clogged because of the stress level. "* (Appendix, E)

Simon refers to the seemingly beneficial effects which automation could bring, as it can free up time that previously was meant for a job. He adds, that it also provides individuals with more time that perhaps could be used with family and friends. Furthermore, does he touch upon the concept of creativity which a shortened week of labor might support, as the stress caused by labor could be decreased. Toby adds further to Simon's' statement:

Toby: *"Much of what Simon also said. More free time both from work but you are also liberated to do some other stuff at work, which most likely will benefit the employer rather than yourself. I also wrote "higher productivity" because we then spend at work will be more productive because we are less stressed because of the smaller working burden"* (Appendix, E)

The freed up time which could be caused by shorter workweeks due to automation is potentially something that could benefit the employee as well as the employer, as Toby indicates. By providing workers with additional leisure time, they could in return be

increasingly effective during work hours, as their mind and body would have benefitted from time off work.

As automation continues to enter the different areas of production and labor, parts of the current tasks that humans normally handle are disappearing. The technological progress has historically altered ways of working, thus, given the innovation and access to improving functioning technology (Xu, David & Kim, 2018). The advent of robots is part of the progress of automation and it affects the time and tasks provided for human labor, which both Earl and Mimi recognize.

Earl: *"I generally think the reduction of working hours is a good idea, especially if it's hard physical labor that is being reduced. I'm thinking that if robots are doing that for us then it's better for us human beings to simply have the Friday off and we can afford to do that if robots doing the hard labor"*. (Appendix, E)

The example of tough physical labor is arguable of great importance, as it can affect an individual's personal life since physically exhausting labor could cause damage to both the physical and mental health. By implementing automation technologies, such as robots, workers could potentially receive increased leisure time and be spared from labor that either involves working with hazardous materials or labor that over time will wear down the physical body. The effects of this could result in a different understanding of what kind of labor humans can be occupied with, as Mimi later during the workshop mentions:

Mimi: *"… It would ultimately lead to fewer working hours for humans but maybe also more time to more valuable work, maybe working with other people or more voluntary work or more time for the family."* (Appendix, E)

By replacing human labor with automation technologies, the shortened working hours could produce and provide leisure time for caring and looking after other human beings, as well as for engaging in voluntary work, which Naastepad & Budd (2019) consider an effect of the increased use of automation technologies.

"Increasingly, routine mental tasks are also being taken over by machines.
To the extent that machines liberate people from unpleasant, monotonous or unhealthy labour and enable them to pursue new aims in life that are experienced as valuable, this is an advance in the human condition." (Naastepad & Budd, 2019. p.121)

A problematic issue, which also was discussed during the workshops, was whether the substitution of humans also would have an effect on a personal income or status of employment if the automation technologies would supersede the tasks and jobs currently occupied by humans. As mentioned by Ford (2015) and Pulkka (2017), there are consequences such as the risk of creating a new class of uncertain and minimal-wage jobs or decreasing the purchasing power due to people losing jobs caused by automation. Toby refers to the situation of automation replacing 'lesser jobs':

Toby: *"Of course, it's a good thing that the 'lesser' jobs [red. hard physical labor] disappear but when they take the incomes with them, it's not so great."* (Appendix, E)

The perception Toby has on the process of automation on the labor market is two-sided, as he acknowledges the benefit of minimizing or removing the 'lesser jobs', but he also recognizes that by doing so, the income will also disappear along with them. Simon does also agree on this point:

Simon: *"A little of what Toby also talked about. That the disappearance of 'lesser jobs' maybe isn't that great... but then again, there are no longer people shoveling coal into a steam engine, so maybe on some level, it's good that people aren't doing that kind of slow and monotonous work anymore."* (Appendix, E)

By providing a historical depiction regarding the disappearance of 'lesser jobs' being be looked upon as a logical solution, future generations might also perceive the loss of attritional labor as reasonable, as new types of labor could occur parallel. This aligns with parts of the research presented in the German Federal Ministry Of Labour And Social Affairs report (2017):

"The Boston Consulting Group (BCG) expects a net increase of 350,000 jobs by 2025, arguing that rising productivity also leads to rising demand, both for new products and for skilled workers. This hypothesis is backed up by a study of regional employment impacts in Europe, which found that around 11 million new jobs were created in Europe between 1999 and 2010 as a result of technological change. [...] The BCG study predicts almost a million new jobs in IT and data analysis and more than 600,000 fewer workers in manufacturing occupations; the Labour Market Forecast for 2030 offers similar figures. For companies, this means that digitalisation will exacerbate rather than resolve skilled labour shortages. The new jobs will primarily be created in sectors where shortages already exist." (Federal Ministry Of Labour And Social Affairs, 2017. p.54)

There are undoubtedly uncertainties related to the predictions, although, clear examples of new types of labor are constantly emerging, which often are closely linked to the advancements made possible by technological progress. Examples of digital marketplaces or intermediary platforms (Ibid. p.55), such as eBay and Uber, offers individuals the possibility of exchanging goods or services through digital mediums.

Although, both the workshop participants and governmental reports see potentials in the continuous automation process, concerns were also expressed during the workshops regarding possible inconvenient effects that could surface from automation (figure 7).

Mimi: (1) A decrease in salaries (3) Less inclusion (4) Will the worker feel like a robot? (7) People are getting "lost"	Earl: (2) Is wealth = Welfare? (4) Fewer hours of work and jobs in the long run (7) There can quickly appear a lot of "improvements" on stuff that already works.	Toby: (3) A radical change in of the labor market, culture and identity. (7) Pressure on the educational system	Joe: (1) A chance of getting a shorter week of work, but with more "alternative" tasks as filling. (2) Fewer jobs (4) Affects a lot the non-creative or social (4) Who is paying for it?
Poul: (1) An increase in unemployment (3) We are forgetting those who are not ready for the adaptation (7) Should we accommodate the machines rather than humans?	Simon: (1) A decrease in income (1) Fewer jobs (4) Harder for people that does not have the abilities reqiered for the labor	Eva: (1) Losing the human touch (2) Larger gap between rich and poor (4) Not everyone have it easy by learning new things (7) A big unemployment rate in certain professions	

Figure 7: Example of post-it notes on disadvantages found in relation to conclusions in "*The effects of automation on the Danish labor market*". The number corresponds to which conclusion.

A common prediction found in the research surrounding the effects on labor due to automation is that individuals must adapt to the constantly changing landscape inhabited by new technologies and the jobs which could be created (Regeringen, 2019; Federal Ministry Of Labour And Social Affairs, 2017). During the workshops, it became apparent that it might prove to be demanding, both for the workers and the system, as Simon explains:

Simon: *"To the statement that all professions have to develop new skills: I'm thinking that it will get harder for people who doesn't have the ability to even be on the labor market. Of course, everyone has skills but in the big picture, but certain groups of people, like refugees, immigrants, and young people, have bigger problems because they even more so lack the necessary skill sets required to entering the labor market at all. And those issues are only going to get worse."* (Appendix, E)

As Simon depicts, the technological effects on labor can impact certain social groups or adolescents and their chances of achieving jobs, since predicaments foresee a rising need for possessing specialized skills. Manual and predictable labor are being dispersed in the slipstream of automation and advancements in AI-technologies, which in return are leaving the workers, especially those without possessing any specialized skill sets, in situations where they require re-education or are simply left unemployed (Hughes & Lagrandeur: 2017). Another concern voiced during the workshops was the potential outcome of a group of workers left behind or left with the remaining presumably low-wage income jobs, as Mimi depicts:

Mimi: *"I'm also thinking, that if the robots could do the same work as the employee, maybe he will see his work as meaningless. If a robot could do it, his work might be less appreciated and he will take less pride in his job."* (Appendix, E)

The description she paints relates to the condition and meaning of being employed, albeit, preferably with something purposeful for the individual. The question regarding what value a

job holds if technology could replace the exact function as a human, for example, assembly line work that currently sees competition from the increasing implementation of automation technologies (Statista, 2019), and who does the progression truly benefit, is also discussed during the workshops.

Mimi: *"That's what I wrote also. Money always wins. If there is more time and more money then it will ultimately benefit the employers. No company is run for pleasure's sake, they are doing it to make money. And I think that automatization easily could mean that only a few companies will benefit unless some strict political guidelines are established. I'm afraid that in the end, only privately-owned companies will benefit from automatization."* (Appendix, E)

The concepts of wealth and income were mentioned by all seven participants, mostly in relation to the consequences and problems the automation technologies bring along, as they become implemented into a business strategy. The gloomy perspective Mimi has on the possible effects of automation, depicts a scenario wherein the businesses glorifies the economic growth and supersedes the human workers, which Earl places in a familiar context:

Earl: *"And in the end who's the winner? And can companies manage to channel all the wealth into welfare in the form of jobs? I immediately think about the guy in the USA who bought a lot of cancer medicine and then increased the prices to really cash in. There are lots of examples of companies that does the same and are leaving the employees behind. My mum works at Novo Nordisk. They have a lot of workers in production that get a decent wage which they take with them back home and spent in their local communities (Hjørring). If those jobs were automated, would the price of diabetes medicine be the same? Probably. Would the people at Novo Nordisk earn the same? Probably not. Because there would be no reason to have the workers there because it's all automated. And then I think the place, Hjørring, as a whole becomes poorer just so Novo Nordisk can earn twice as much with half the workers employed."* (Appendix, E)

Earl presents a story that contains an example of the possible effects of having a group of employees at Novo Nordisk being substituted with automation technologies, wherein he elucidate the economic potential the business could obtain if replacing human labor due to automation. His description also involves a notion of the *precariat's* circumstances workers affected by automation are in, which Standing (2011) describes, are leading to insecurity and external pressure.

"Another way of looking at the precariat is in terms of process, the way in which people are 'precariatised'. This ungainly word is analogous to 'proletarianised', describing the forces leading to proletarianisation of workers in the nineteenth century. To be precariatised is to be subject to pressures and experiences that lead to a precariat existence, of living in the present, without a secure identity or sense of development achieved through work and lifestyle." (Standing, 2011. p.18)

Just as the common worker is experiencing the effects of introducing automation technologies, e.g. assembly-line robots, the wealth generated by the replacement technologies is potentially created due to the fact of having fewer humans employed. This was also mentioned during the workshops, as Toby expressed a concern for the problematic nature of the accumulating profit companies can acquire by a replacement of parts of the human labor and tasks.

Toby: *"... We, the private consumers aren't spending more money and the wages aren't being increased at the same rate. The public sector always has to cut, so public spending and investments won't increase much either. And what incentives do the big companies, who are those set to benefit the most from automation, have to reinvest that capital if they can't make more sells anyway, because of over-all lower growth of aggregate demand?"* (Appendix, E)

The concerning issue regarding how the accumulated wealth becomes distributed is, perhaps, of political and moral substance. One can speculate if the wealth would become redistributed into new types of labor that are arising out of the new technologies that come along in the future or whether companies will seize the opportunity to benefit from substituting human labor.

"Whether or not technological un(der)employment will arise depends on whether this internally generated capital is used to fund the further development of the capacities of those whose labor has been obviated. In this sense, technological un(der)employment is not a technological or economic problem but a cultural and a social one; its existence depends on how we understand and organise capital." (Naastepad & Budd, 2019. p.119-120)

As indicated by Naastepad & Budd (2019), it all might depend on how current societies choose to organize and divide wealth stemming from the technological progress and automation technologies, since human workers inevitably are at risk of facing challenges relating to emerging technologies.

Preparing the human race

Whether the human race as an entity will endure the technological progression and the gradual substitution of workers due to automation is significantly difficult to predict, although, perspectives regarding how humans should adapt to the changes and what central values that potentially would be spared of the effects of automation-related to labor. Questions regarding what set of skills coming companies and businesses are desiring, both in regards to the human workers and automation technology, is also concerning researchers and governments. A great proportion of The Danish Government's and McKinsey & Co's reports regarding the current and future state of the Danish labor market are dedicated to methods and policies on how to accommodate the technological progress and effects of automation on labor.

"Finally, there's a special challenge with regard to the transition for the employed or those on the edge of the labor market. This study points out that for about 250.000-300.000 Danish employees the need for skill development is crucial because their jobs are easily automated and the group historically has had a hard time changing to jobs that are hard to automate." (Mckinsey & Company, 2017. p.13)

As stated, a large group of currently employed persons will presumably be affected by the automation processes. Furthermore, it is believed to cause complications, as the individuals currently possessing the jobs that are at the greatest risk of being impacted by automation technologies are having trouble finding and landing a type of job not which is not in high risk of becoming automated (McKinsey & Co, 2017). Examples of these situations, wherein human workers are being substituted with technology, was also debated during the workshops. Especially, during the activity revolving around five scenarios that were describing previous and current examples of automation and concrete technologies that are used in the process, it became evident that a human presence should be considered an important element in a variety of different situations regarding labor and employment.

Earl: *"For example, Føtex, I never grocery shop in Føtex because they have these automatic check-out scanners and I think it's a living hell because you can never get in contact with an actual employee because they are not around. Maybe somewhere in the shop, but not where I need it and I think that irritating. I want to go to Netto and say hello and "have a good day" to the cashier because it gives a human contact and she can help me if I have any questions regarding price differences and whatnot. If she helps me she gets fulfilled through her job and I get happy that she could help me with something. It's that kind of human interaction that I think is important and we risk removing that if we automate all of society. The same thing with the bus driver, I love saying hello to the bus driver in Aalborg, but in other places like Copenhagen, they have the check-in in the back so you don't get into contact with the driver at all. I fear that in the future, we won't have a bus driver at all and we just enter the bus going from point a to point b".* (Appendix, E)

As the unemployed participants were presented with examples of automation technologies that, to some extent, have had an influence on how certain types of labor, previously belonging to a human employee, currently is being implemented into ordinary settings (picture 3).

Picture 3: Pictures used for supporting the descriptions from the activity involving scenarios (Appendix, D)

Having an actual human being in the midst of the interaction, e.g. in supermarkets or busses, Earl is finding comfort in knowing an employee is available when problems occur. By automating the role that a human occupies, elements such as being able to greet the customer and asking for help becomes distant and frustrating. It is not only Earl who recognizes the importance of preserving human contact in relation to labor, as Mimi relates it to the role of a pilot on an airplane:

Mimi: *"If a plane was fully automated, people would go ape-shit crazy. No one would feel safe about that. Just by seeing the pilot going to the toilet mid-air, one gets all, "oh no, there's only one pilot now!".* (Appendix, E)

Human contact is not only important regarding the social aspect of seeing and interacting with another living being, which Mimi relates to the comfort and feeling of security a human offers different situations. An aspect, brought forward by Toby, adds to the statement of Mimi, as technologies can help optimize and improve situations that are caused due to the involvement of human beings.

Toby: *"I'm reminded of a scene from "I, Robot" where Will Smith is so old fashioned that he wants to drive manually in a world where cars drive themselves. And everyone thinks he's crazy to go at those speeds of over 200 km/h. It's hard for us to imagine today a world where it is safer to enter an automated car going to your destination than it is to drive yourself, but we are rapidly approaching that point. Then we might lose contact with the bus driver in the long run."* (Appendix, E)

A common argument among technology developers working with autonomous transport is, that autonomous vehicles will improve safety, related to human incidents in the traffic (Xu, David & Kim, 2018). In the science fiction movie I Robot (2004), robots and autonomous systems are an integrated part of the human society, which Toby predicts potentially will benefit the human race, although, jobs can be lost in the process. The possible scenario of autonomous systems becoming fully integrated into nearly every aspect of life is being reflected upon by Xu, David & Kim (2018), who argues that:

"...robotics can and will change our lives in the near future. Technically robots are automated motorized tools.They cook food, play our music, record our shows, and even run our cars. But we just do not see it because robots do not have a face we to whom we can talk or a butt we can kick. (Tilden) Consequently, robots have the potential to improve the quality of our lives at home, work, and many other places. Customized robots will create new jobs,
improve the quality of existing jobs, and give people more time to focus on what they want to do." (Xu, David & Kim, 2018. p.92)

Through the increased improvements and thereby potentials of technology, human life and the activities performed can change for the greater good. Events in which humans have been an influential factor in regards to an accident, examples wherein a technological alternative could remove the human factor suggests eliminating the alarming situations that humans are responsible for, such as traffic or labor accidents. The process should, as noted by Xu, David & Kim (2018), be of some concern since technologies tend to operate in the background and often occur beyond human perception. Transparency could, therefore, be an even greater matter moving forward, as the process of automation potentially affects the society and forms of labor.

Another topic discovered during the workshop with unemployed participants was how humans should prepare themselves for the altering conditions related to automation and technological progress. Notably, education was brought forward, as it is a core principle for almost every human being. Due to the constantly changing technological landscape, how individuals educate themselves can be perceived troublesome since the existing types of labor inevitably will transform or even disappear, as Toby describes:

Toby: *"One of the disadvantages, is especially the pressure on your educational system because we are forced to learn new skills and where do we need to do that? We have to do that at an educational facility and they are constantly under budget pressure atm, no more money seems to be going their way. It's a dilemma. And it will present a challenge not just for the educational facilities but also the educations themselves: Will we need to educate the same way as before? Have the same educations as before? I'm imagining a scenario, where the point the progress of technology is so rapid that by the time a new and exciting education finishes producing it's the first batch of students, the education will already have become obsolete. How will we know in a world of rapid change and technological progress if the knowledge we teach will create any work for the students in the end? Technology is happening faster and faster, but we don't have more time as individuals to compensate for its adverse effects."* (Appendix, E)

The insecurity that surrounds the effects of automation is regarded as important to recognize, as Earl depicts the concerning issue of how educational institutions and systems are organized. As technologies emerge and influence different types of labor, current types of educations can become obsolete due to the new demands for certain types of skills related to the new types of jobs in the future. If the automation progress is continuing, the relevance for obtaining a university degree could become problematic, as new technology could have surfaced within a given domain and inevitably erase the demand for human labor. A suggested principle to follow was presented by Earl, related to his educational background as a teacher:

Earl: " What you have to learn today is skills and the ability to acquire knowledge and always find the necessary knowledge. You don't need to do math in the head today just like you don't need to know every about World War 2. That's what the public school is aiming for what I wrote about, lifelong curiosity. That's what it's about today." (Appendix, E)

In having a teacher's perspective, Earl contemplates that the attributes most needed in the future would be the ability to continue to learn throughout the entire life. The future will possibly involve automation in all types of labor, therefore is adaptability a competence that should be promoted, which Peters (2019) reflects upon in relation the current transformation of our perceptions on the future of labor and automation:

"Most of the forecasts about the impact of the new wave of technology seem condemned to repeat the past – they highlight changes that might be made in order to keep the society we have. Education is seen as a social sponge and lifelong learning is seen as a 'solution' to the need for perpetual retaining in new skills. The emphasis seems to fall on mopping up the unemployed, creating work, rather than focusing on a sustainable future society that can protect its citizens." (Peters, 2019. p.2)

The ability to learn and adapt can firmly be regarded as needed and important, although, as Peters (2019) indicate, sustaining the existing paradigm of attempting to educate and employ the masses from a principle of economic growth seems to dominate a direction towards creating sustainable societies with protection for its citizens. This becomes increasingly relevant if automation will affect the labor markets by creating a staggering rise in unemployment rates.

Basic income and its attributes

As part of the collaboration with BIEN Denmark, one of the research areas for this study was to uncover the participants' perceptions regarding basic income concepts and how these could be transformed into ideas for possible basic income models. It should also be noted that the contextual frame for which basic income is placed in relates to automation and the effects on labor. Basic income is not solely a concept that exists within the discussion of automation and the technological, thus, present in numerous areas of interest, such as the

environmental agenda or social politics. The span found within the topic varies from theories regarding taxation to universal income without means test (Lucarelli & Fumagalli, 2008).

It was a common perception shared almost unanimously by all participants that basic income or similar concepts contain advantages in regards to the potential effects of automation on labor, but also regarding the quality of life and what a guaranteed UBI could result in. Simon, one of the unemployed participants, was the only person to vocalize his skeptic against basic income concepts which transpired into discussions regarding the consequences that come with being unemployed.

Simon: *"And the worst part about being unemployed? That's meeting other people who think they have the right to correct me just because they are "paying" for my benefits. [...] And with a basic income, we will kill initiative and create an even bigger class of people who are just left behind. I'm thinking that if today about half of the people are contributing and the other half is enjoying then in the future it might be 30 % free-riding and 70 % contributing through work. We can get a huge class of people just left behind".* (Appendix, E)

The perception expressed by Simon indicates the concern of basic income being a catalyst for individuals to become demotivated in finding work since they potentially can rely on the basic income funds given. It furthermore indicates the issue of individuals becoming lost in society, as their motivation for working is resulting in a state of passiveness. Standing (2019) proclaims differently:

"Most recently, the basic income experiment in Finland found that removing the condition that the unemployed had to search for jobs made no difference to employment, and the basic income pilot in Ontario found that it induced a substantial increase in voluntary work." (Standing, 2019. p.42)

Potentials, such as providing individuals with the time off work, could transpire into tasks and labor that differs from salary-based jobs. Basic income, as Wehner (2019) proclaims, should not be regarded as a concept without side effects, but it is perhaps naive to believe that politicians and decision-makers would not have taken those considerations into account.

"Recipients of basic income, it claims, could supposedly afford not to work or at least to work less than in the existing welfare system, and people would make widespread use of this option [...] These objections take for granted something highly implausible: that policymakers would design the basic income system without regard for those unintended side effects" (Wehner, 2019. p.25)

Basic income models could result in, as Simon considers, a lack of motivation regarding finding and maintaining a job, but it could also transpire into individuals becoming motivated for other types of work. During the workshop with the unemployed participants, several examples were presented wherein the effects of basic income could occur in society.

Toby: *"You're saying that there's something wrong with clearing leaves on the street, but why doesn't it have to be like that? Everyone likes to have clean streets but who has to pay for it? I'm thinking about such an example in a world with a basic income. Let's play with that thought: there would be volunteers to do that because you are working fewer hours in the first place."* (Appendix, E)

The process of automation does not equal a task-free society, but a basic income model could release the required time for completing necessary societal tasks such as sweeping leaves. As the effects of automation technologies impact the labor markets, certain types of labor can disappear, among them, the 'lesser' jobs. By securing every individual in a society with the comfort and security that UBI could provide, the option of pursuing activities or more meaningful jobs. As White (2019) suggests, it could be considered a benefit for the human race.

"And rather than being unproductive in what Graeber (2013) has referred to as 'bullshit jobs', might not it be more useful to think about how large numbers of people might benefit from being freed from permanent full-time work and working on something more worthwhile instead? This could be voluntary work, or even hobbies a person has always wanted to pursue but never had the time to, such as learning to play a musical instrument or an additional language. It could be a job too, with the financial support that UBI would represent giving them the security to move from their present 'bullshit' job to a more worthwhile occupation." (White, 2019. p.74)

Automation can potentially affect the existing types of labor, but if the *bullshit* jobs are being lost in the process, it might not be an alarming issue for human beings. The problem, as seen in a current Danish context, is when people are left without employment and have to rely on transfer payments. The support given today is most often entwined in a means-testing system, as requirements must be met in order to be validated for a certain type of financial support.

Mimi: *"Yeah, I don't think the current way of doing things will matter when people are searching for jobs on Job.net when they know there's no chance of getting any. You might as well don't. There's no reason to shame people."* (Appendix, E)

The effects felt from the current public transfer payment system is being perceived as problematic by Mimi, as the demand for a continuously search for employment causes individuals to become worried and stressed. Furthermore, it also has the nature of begging embedded within the current system, as explained by Earl.

Earl: *"I think it will destroy some people because they feel like they have to beg for money. It does something to my own sense of self-respect. I would much rather not have been in the dagpenge-system [red. unemployment benefits system]. I would much rather not get any money and then enter that system or just collect bottles or work at a warehouse. Anything but entering that system again. I'm thinking it's a little funny, you know, that I have it mentally better when I don't have to beg for money than if I have to beg for money".* (Appendix, E)

As Earl has been receiving unemployment benefits for more than a year, he has not been accustomed to the constant means-testing that is required by an unemployed individual. He perceives the concept of means-testing degrading and does not find any comfort in the way that the system currently is structured, as he assimilates his situation to that of a beggar. The barrier caused by means-testing transfer payments is considered possible to remove, as basic income could provide the necessities for a decent livelihood, and thereby, reducing the stress that can be attached to the status of being unemployed.

"True, by providing an obligation-free income, a basic-income scheme can be viewed as desacralizing paid work: it legitimizes pay without work for all, not just for the disabled and the rentiers able to live on income from property or securities. But by providing a universal floor to which income from other sources can be added, it can nonetheless also be viewed as an instrument of activation that will help other instruments, such as retraining or social work, do a better job." (Van Parijs, 2017. p.27)

By freeing up the time that either was meant for working towards a salary or filling out job applications, the security provided from a basic income model could become an instrument for letting individuals retrain skill sets, be engaged in voluntary or social work, or even just finding a decent job. Many of the attributes the participants perceived to be important to incorporate into an eventual basic income model, became a topic during the final activity of the workshops. Their writing of design criteria for a basic income model (figure 8) gave insight into some of the most valued concerns in relation to the content of their design.

Figure 8: Extracts taken from activity 4 from the workshops. Post-it notes with design criteria for a basic income model. (Appendix, C)

It was a commonality found in the designs, that basic income should cover all essential living expenses for an individual, although, the exact amount expressed seemed to vary from participant to participant. One example was presented by Toby during the workshop with the unemployed participants.

Toby: *"I'm thinking of an unconditional basic income for 15.000 kroner a month but it will be slowly phased in from when you turn 18 and the full payment once you turn 28. So the first year you are only getting 1500 a month, second-year 3000, third-year 4500 and then when you turn 28 it's the full amount every month. This way, young people won't be overwhelmed by 15.000 kroner each month when they turn 18!"*. (Appendix, E)

An interesting aspect is, which also is shared by participants such as Eva and Mimi, that the entitlement for a basic income should be implemented gradually, as Toby believes 15.000 Dkk would be regarded as above what an 18-year-old needs. He also acknowledges the idea of universal basic income (UBI), and thereby, should there be no requirements to be met, besides being of legal age. This viewpoint is contested by Earl, who perceives a society that supports the livelihood of every citizen but in return requires every individual to participate in beneficial work for the society.

Earl: *"And of course, that has to be: Shelter and food, internet and power. These things are important to have. And of course, you have to afford this. I don't think anybody in Denmark can live without the internet these days. And of course, the amount has to be adjustable. But the thing about the internet and those kinds of stuff that comes next, because what about the conditions. First of all, I think basic income is a prerequisite for a complete restructuring of society. I'm thinking that the conditions are a kind of community service, but without it being a meaningless thing. It would be fun having community services, like a Saturday afternoon where people don't have anything to do anyway. It can be called something else, something exciting, and everyone should be obliged to participate."*. (Appendix, E)

It is quite unrealistic, what Earl depicts, that every individual could be forced into social work once a week. However, it encapsulates what can be perceived as the principle of *reciprocity*, which in the aforementioned statement is symbolized as a quid pro quo. Widerquist (2018) also recognizes the claim of reciprocity as an embedded value in UBI, both in regard to the positive and negative perceptions related to it.

"The reciprocity (or work ethic) claim: UBI makes it possible for non-wealthy people to share in the benefits of social production, which involves labor, without making a reciprocal labor contribution of their own—or without any meaningful social contribution at all. This obser-
vation is often labeled a violation of norms such as reciprocity and/or the work ethic." (Widerquist, 2018. p.103)

If the proposed suggestion presented by Earl would become a reality, all citizens regardless of status or beliefs would have to contribute to the greater good of the society, which could be to collaborate in solving societal challenges, big or small, every once a week. The issue of individuals taking advantage of basic income is, although, acknowledged by Simon.

Simon: *"I had a source of income and suddenly I'm screwed and have to, which is not easy, get everything to work. It kind of bubbles inside me when you take away or say that there should be no motivation for working, even the jobs you think might suck.".* (Appendix, E)

The concern raised by Simon is the seemingly positive perception that ties into the requirements which the current unemployment benefit system holds, as it complicates the possibility of free-riding. The discrepancy between the perceptions of basic income and the effects by introducing it into the society is of an urgent matter, as Wehner (2019) describes:

"One of the major objectives of the citizens' stipend system is to make the political dispute over the distribution of income and prosperity easier to understand and less diverse and thereby to foster social peace and consent". (Wehner, 2019. p.5)

Decisions regarding the implementation of any type of basic income concept should be made after thoroughly exploring and considering the potential effects it would have on citizens. This highlights the relevance for exploring and informing citizens and decision-makers of the issues revolving around basic income, both as an alternative for the process of automation but also as a political and humane consideration.

Discussion

Following the analytical treatment of the three main themes, the following sections will discuss how Participatory Design has influenced the methodological approach and findings regarding this study. Furthermore, reflections will then be presented in relation to workshops as a tool for nurturing and capturing the participants' perceptions of the subjects of automation and basic income as a possible direction for the future society.

Features of Participatory Design

Several reasons exist for incorporating the methodological understanding of Participatory Design into a research or design project, as it contains a palpable suggestion for obtaining crucial knowledge in regards to a large spectrum of areas of interest. This study places PD as the foundation from which citizen-centered perspectives can be derived and techno-anthropological competencies, such as investigating sociotechnical conflicts, can be brought forward in relation to the area of automation, technological progress, and basic income. The methodology of PD seeks to equalize the design processes in a technological dispute or a complex situation, wherein multiple voices, stakeholders or interests are encouraged to participate in sharing and creating concerns and solutions. The rationales behind the concept are explained by Robertson & Simonsen (2012):

"There are both pragmatic and political rationales for genuine participation in design. The pragmatic rationale stresses the need for users and developers to learn together about possible and useful technical solutions. So mutual learning and the setting up of mutual

learning processes are defining commitments of Participatory Design. [...] The political rationale for genuine participation in design reflects a commitment to ensuring
that the voices of marginalised groups and communities are heard in decision-making processes that will affect them. The motivation was and remains democratic and emancipatory: participation in Participatory Design happens, and needs to happen, because those who are to be affected by the changes resulting from implementing information and communications technologies should, as a basic human right, have the opportunity to influence the design of those technologies and the practices that involve their use." (Robertson & Simonsen, 2012, p.6)

The two rationales are represented in this study by the notion of regarding actual users, represented by individuals that currently are attempting to enter the labor market or preparing for it, as carriers of contextual knowledge concerning the impact and effects of automation and technology on labor. It would prove even more useful moving forward, to also incorporate actual decision-makers or even technology developers into the PD inspired process of democratizing the design and research process. As previously mentioned, PD aligning methods can be used for *bringing the workers to the design room* but it can also *bring the designers to a workplace* (Muller & Druin, 2012. p.1132), which furthermore, points to the possibility of the beneficial effects of mutual learning and understanding. As the collaborative element with BIEN Denmark has been influential on the chosen philosophical topic of basic income, future strategies could be for the organization to consider deploying workshop-based interventions or debates in the quest for informing citizens regarding UBI but also for testing out proposed models among different stakeholders. PD should not merely act as a method of facilitating joined sessions of workers and designers, as democratic values should be present in the final stages of a design or research project, as all voices, marginalized or not, should be heard and included in the general process.

"Meanwhile, we argue in [6] that the label participatory design seems to have become synonymous with a banal form of user-centered design, concentrating on more local issues of usability and user satisfaction. Such a view sees participation as simply the involvement of any stakeholders at any point in the process. This is a far cry from earlier work in the field, where participatory design sought not only to incorporate users in design, but also to intervene in situations of conflict through developing more democratic processes." (Bannon et.al, 2019. p.28)

This study attempts to demonstrate the value which PD offers, not just by incorporating users or citizens into the research process of obtaining knowledge, but by presenting the possible emerging conflicts caused by technological disruption on the labor market to relevant users of technology, which offers perceptions holding viable information for organizations or decision-makers. Furthermore, by depicting the participants' concerns and perspectives for the future of mankind and labor, this study attempts to showcase a relevance for understanding the sociotechnical and moral issues that are presented throughout its entirety.

Designing and facilitating a workshop

By taking the prescribed methodic guidelines of PD (Simonsen & Robertson, 2012; Muller & Druin, 2012), the method for obtaining perceptions on the effects of automation and basic income was to facilitate workshops with groups of people currently outside the labor market. The reason for incorporating workshops into a research or design project is for the flexibility it can provide different stages and activities with. It can also incorporate elements similar to interviewing a focus group or producing analytical artefacts into the process.

"Workshops with designers and users using techniques such as mock-ups, scenarios, prototypes and various types of design games have been central to Participatory Design since it began. These enable ongoing design experiments to visualise, simulate and experiment with selected elements of envisioned technologies, in use, prior to their development and implementation. They enable the participants in the design process to propose, represent, interrogate and reflect on different aspects of the developing design continually throughout that process." (Simonsen & Robertson, 2012. p.9)

In relation to this study, two workshop sessions were held with participants currently being unemployed or in the progress of finishing an education. The activities planned were designed by incorporating different techniques for obtaining data, as the participants were asked to present advantages and disadvantages in relation to the conclusions found in the McKinsey & Co report (2017), discuss depicted scenarios in relation to automation, and to discuss basic income concepts and design their own criteria for a potential model. It can be argued, that by taking an offset in the report made by McKinsey & Co, the contextual frame surrounding the concrete activity would be steered by the findings presented. Although the possibility existed, the activity was meant for provoking the participants with the seven conclusions from the report, as they, which several times were mentioned during the workshops, seemed to either be to narrow or too unclear in their design.

"The aim of these provocative artefacts is not to 'understand' the work per se, but to expose both the possibilities and constraints on future design directions. The provoking artefacts are purposefully introduced and the responses to these artefacts enable design collaborators (users and system designers) to endorse future possibilities and correct misconceptions." (Blomberg & Karasti, 2012. p.101)

By enabling the applied tools for the workshop to become mediators for conceptualizing and discussing possible previous or future problematic issues, which arguably helps to encircle the participants' tacit knowledge; *"i.e. personal, experienced knowledge"* (Bratteteig et al. 2012. p.134). The underlying theme for the workshops was to imagine and comprehend possible effects on labor due to automation technologies, which the activity involving scenarios and pictures with examples of automation attempted to produce.

"Scenarios, thus, are constructions made with a purpose. This purpose helps scenario constructors to be selective. The purpose may relate to both the type of situation the scenario is dealing with and to the type of design situation that the constructors want to

support." (Bødker, 2000. p.63)

The scenarios and pictures used during the workshops were designed with the aim of covering broader spectrums of industries and professions affected by automation. It also proved to ignite reflections within the participants, if a picture or scenario description was tangible, relatable and realistic. Another perspective could have been to design a specific scenario in regard to each individual participant's educational background, demonstrating current or coming disruptions.

The practice of reflexivity should constantly be an ongoing activity within any researcher (Schön, 1983). By doing so, it not only supports the findings of the research, but it also serves as a reminder of actually being aware of the subjectivities each individual person, including oneself, emits onto situations or research-related decisions. As the empirical data stem from two separate workshops, minor changes were made, as the workshop with unemployed participants proved, that having the same person initiate every round of discussion could result in the persons who were finishing the same discussion or presentation having fewer perceptions to add. This was changed during the workshop with students as participants, which made the distribution of time for talking more even. Acknowledging the need for improving equality among participants can, therefore, serve as a practical example of how reflecting upon reflections can lead to greater cohesive performances.

Conclusion

Inviting different voices and interests into the process of uncovering the underlying presumptions of automation and basic income has been demonstrated to provide insight into the issues that concern an individual, although, proper tools and techniques are needed and must be reflected upon. This study seeks to explore, how automation and the effects it can have on labor are perceived by individuals currently unemployed or studying and how basic income is perceived in relation to serving as a solution to unemployment. Three themes were found to represent essential understandings on how automation can influence the current structures of labor; *Concerns and hopes for the future of labor*, *Preparing the human race* and *Basic income and its attributes*. The findings indicate several potentials in automation, as it could prove to provide reduced working hours and help to eliminate the current forms of hazardous types of labor involving humans. The more ominous concerns relate to the risks such as groups of individuals becoming unemployed due to automation, companies becoming wealthier at the expense of human workers, or the creation of a class of individuals without the needed skills for an automated labor market. Notably, the importance of having a human being present during different types of labor was regarded as both comforting and meaningful, which might become a rare element in the future of labor. Basic income as a suggested applicable concept, are recognized by 6 out of 7 participants as having a potential as a means for dealing with unemployment. The findings also indicate a common perception of basic income being a humane and can help individuals affected by stress, both in regards to finding labor and being employed. If a UBI model were to be introduced, a concern raised was the potential risk of people becoming demotivated of work.

In conclusion, effects of automation should carefully be taken into considerations for the future generations, as the structures of society and the labor within are bound to transform. This process could potentially benefit from an implementation of basic income, as it can act as protective tool for unemployment, and furthermore, it can support human beings in providing the security needed for sustaining a decent life.

This study suggests, that increased focus and transparency are needed in order to examine the effects of implementing basic income, as this study also aligns itself with previous research, by not having any major experiments or studies to refer to. This could also support a holistic understanding of how basic income could be designed in order to satisfy as many individuals as possible.

Acknowledgments

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