

# **Navigating towards sustainable working life – young people imagining the technologised future of work**

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## **Abstract**

Drawing on data from participatory research workshops with 16–18-year-olds from different educational settings, this article explores the orientations of young people towards future work, especially regarding technological change and digitalisation. Despite the future's uncertainty, the young people involved in the study were hopeful that technological advances would create new opportunities and jobs. In the young people's accounts, work is defined as an individual's responsibility and a source of wellbeing in terms of social and economic wealth and meaningful life. Moreover, we identified in their accounts a powerful discourse which we named 'responsibilisation for sustainable future of work'. Within this discourse, they presented a demand on human beings, including themselves, but especially those with skills and power, to secure the continuation of work as a form of meaningful social engagement for everyone. Considering these findings through such conceptualisations as epistemological fallacy and neoliberal entrepreneurial mindset, and acknowledging the current political, economic and ecological challenges to work as a provider of wellbeing, we contemplate possibilities for collective alternative visions of good life and citizenship, taking seriously the interconnectedness of wellbeing, meaningful life and sustainable social practices.

## **Introduction**

The unknown future inspires dreams and wishes, especially among young people who have their adult lives ahead of them. Dreams and desires are together an important driving force, as they involve an ability to imagine alternative possibilities, as researchers of human agency have argued (e.g. Emirbayer and Mische 1998). Imageries of the future are rooted in our everyday lives, in media accounts and public debates. At the same time as the future is depicted in these discourses as a possibility for self-actualisation, it is said that a new kind of uncertainty could restructure the living conditions of humankind in remarkable ways (e.g. Harari 2018). The risks and insecurities are seen as stemming besides from turbulent geopolitical and economic circumstances and planetary crises, also from digitalisation, advances in artificial intelligence, biotechnology and robotisation in working life (Valenduc and Vendramin 2017).

In the article, we will bring young people's visions and thoughts on technologisation and working life more firmly to the research agenda. Young people's uncertain futures and increasingly complex transitions to work have been core areas of youth studies for years, but within that discussion the role of technologisation has not been thoroughly discussed (Kelly 2017). This is despite the estimation that technology will have a multifaceted impact on the volume and character of work (Marcus 2019), thus shaping the future landscape and prerequisites of wellbeing for young people. Finland, which is the geographical and societal context of this article, is depicted at the forefront of high-level technological development (e.g. Leviäkangas 2016) and internationally renowned for its innovations in technology and education. In the Finnish educational system, ICT skills are regarded as an essential part of the twenty-first century competencies. The integration of technology into the pedagogical practice and physical architecture of schools in 'the new ecosystems of learning' has been invested systematically, which is promoted in the National Core Curriculum (2014) and by

large-scale collaborative projects with the technology industry. (Niemi et al. 2014.) However, the challenges of technological change in young people's futures are to a lesser extent visible in the curricula or teaching practices (Ågren, Pietilä, and Rättilä 2020).

Whilst young people in the twenty-first century Finland grow in a cultural climate of technological optimism, where technological skills are nurtured and high-tech learning tools are provided, they also encounter a social reality where it is not self-evident that there will be work for everyone. Work life altogether is a field of competing and often paradoxical discourses and trends. In this article we explore how young people account for the technologisation of future work to better understand how contemporary discourses and trends shape their visions and how they position themselves within discussions of technologisation. We begin with the assumption that the prevailing cultural stories related to technological advances are not only visible in the accounts young people tell us in the research process, but more importantly, that they have an impact on the stories they tell themselves about what they can be(come) and how they can live in the future. As such, they serve as resources in young people's agency and identity work (Silverman 2011, 188–199).

We will start by exploring recent evaluations of the impact of technologisation on working life, especially regarding societal belonging. Thereafter, we discuss epistemological fallacy and the entrepreneurial mindset of neoliberal capitalism as examples of recent conceptualisations to capture young people's orientations towards the future of work. They make sense of young people's optimistic views of the future in circumstances that are often marked by precariousness and risk. Informed by these discussions and by close reading 16–18 year olds' accounts given in workshops in three educational settings, we study whether the prevailing imageries of technologising work foster hope and possibilities for young people to make their own future, or whether they form another layer of uncertainty in attempting to understand the unknown future.

## **Technologisation and digitalisation restructuring working life**

Technologisation and digitalisation are megatrends of working life of the twenty-first century. The first refers to the accelerating speed of technological innovations and processes, whereas the latter describes how diverse activities and functions take on an information technological (digital) form, and how tasks previously performed by humans are increasingly carried out by robots or artificial intelligence (AI). AI, in turn, can be understood as a nerve- or neuro-network that connects ever wider and more complex digital fields into a self-learning and developing entity. The new sensing machines – robots – can transform digital information into acts, process information effectively, and even 'think' independently (Rousku et al. 2017; Valenduc and Vendramin 2017, 124–126.)

These developments are viewed as profoundly modifying the structures of the global economy and the nature of work, and they are thus evaluated as having major effects on educational systems all over the world (Harteis 2017; Wyn 2017, 93). This situation is seen as placing new demands on human beings, especially regarding psychic resilience and flexibility in the face of continuous change and the fact that work will become a rare resource, meaning that some of the population will become redundant and lack a 'secure means of livelihood' (Kelly 2017, 393, 48–49; see also Balliester and Elsheikh 2018, 8).

The ambivalent discourse surrounding the future work has thus far not unsettled the stable position of working life as a strong marker of adulthood, societal membership and part of what is regarded as a good life. The so-called labour market citizenship (Tiainen, Leiviskä, and Brunila 2019) has not

lost its significance as an indicator of competent and productive citizenship. This orientation begins already at the basic school, where a strong emphasis is placed on educational achievements as a precondition for successful adult life, and where standards for normality are set (e.g. Aaltonen 2012). The central position of work has a strong influence on young people's future aspirations; for example, 99 percent of Finnish young people wish to have a meaningful job by the age of 35 (Myllyniemi 2017, 27).

The hegemony of the notion of labour market citizenship as a marker of a good life also derives from the Finnish, or more broadly Nordic, welfare state model (Greve 2007). According to social policy scholars, the emphasis on citizen integration into the labour market has been strengthened in social inclusion policies during the past 15 years, hence marking a shift from the ideology of universalistic services and human rights to one that focuses on individual risks (Kokkonen, Närhi, and Matthies 2013, 37–39; Raivio and Karjalainen 2013, 13). What is paradoxical in this situation, however, is that labour markets are not able to offer work for everybody and will be even less able in the future (Raivio and Karjalainen 2013, 29–30).

These changes concerning work are important as they form structural determinants that influence young people's lives in concrete ways. Moreover, the public debate that takes place around trends and discourses surrounding technologisation serve as narrative resources which young people draw on – comment, resist and rely upon – in constructing their own stories and identities.

### **Conditions for agency for young people in a technologising world**

Youth studies scholars have analysed the temporal orientation in youth, especially how young people can act as agents for their own futures (e.g. Nico 2017; Woodman 2011). In these accounts, the relationship between global labour market trends and young people's choices is commonly contemplated, and many scholars have emphasised the 'unprecedented uncertainties' (Heggli, Haukanes, and Tjomsland 2013, 916) young people currently face in this. According to Carmen Leccardi (2005), young people are committed to the idea of the future as uncertain, open and malleable, and Guy Standing (2011) introduced the concept of precarity to analyse young people's relationship with increasingly precarious labour markets with scarce prospects for permanent full-time jobs. This concept attempts to capture young people's feelings of betrayal, anxiety and anger when realising they have limited possibilities for wealth and decent living. Youth researchers have also been inspired by the so-called individualisation theorists (e.g. Beck and Beck-Gernsheim 2003; Beck 2000) when studying the fragmentation of traditions and collective identities, as well as the tendency to focus on the individual responsibility for finding one's path in an unpredictable world. Consequently, scholars have analysed the demands for young people in postmodern societies to be as 'self-navigators' able to optimise their chances for the future by learning from their personal past (Wyn 2017).

Besides the scenery of risks surrounding young people, studies have made sense of their optimism regarding their individual futures in working life (e.g. Franceschelli and Keating 2018; Cahill and Cook 2020). The discrepancy between young people's optimism and that of determining classed, gendered and racialised societal structures has been conceptualised as 'epistemological fallacy' (Cahill and Cook 2020; Nikunen 2017; France and Haddon 2014; Furlong and Cartmel 1997). This concept makes sense of the ideology of individual responsibility for occupational and career choices. This ideology affects young people in particular ways, as stated by Furlong and Cartmel (1997, 114): 'Blind to the existence of powerful chains of interdependency, young people frequently attempt to resolve collective problems through individual action and hold themselves

responsible for their inevitable failure'. Regarding difficulties in entering working life, epistemological fallacy has been interpreted as 'one of the mechanisms through which frustration and anger is internalised as self-blame and self-doubt' (Furlong 2017, 35). Alan France (2007, 70–72), in turn, saw the optimism involved in epistemological fallacy as a form of false consciousness, as he contends that:

the discourse of 'choice' and 'opportunity' that permeates both commonsense understandings and political approaches to individualism, alongside the decline of collective social identities, also creates a sense of false reality for the young, in that they believe they are able to take control of their own lives (71).

Young people's optimism against an uncertain future has also been analysed as a so-called entrepreneurial mindset of neoliberal capitalism which young people are encouraged to assume and which they have, to a certain extent, internalised (e.g. Kelly 2013). To ensure their employability and ability to cope in an uncertain labour market, this mindset or spirit urges young people to flexibly modify their personalities to meet the shifting requirements of working life (Oinonen 2018, 1346–1347; MacDonald 2017, 162). Besides the need to modify one's self, this spirit also involves holding a positive attitude towards work and one's efforts to pursue it. The aim is to secure the ingredients of a good life, including happiness. Ikonen and Nikunen (2019) argued that this mental state means subjectification of work as it demands accommodating one's attitudes and conduct to the requirements of the working life.

It is notable here that this mindset, together with the enduring hegemonic position of labour market citizenship, is an essential part of the contemporary governing, education and guidance of young people. Hence, young people's optimism is derived not only from the hope often related to the youth as a life stage (Arnett 2000), but also from the guidance provided by parents, teachers, politicians and other adults (Nikunen 2017; Biggart, Järvinen, and Parreira do Amaral 2015; Aaltonen 2012). It has been claimed that young people are encouraged to pursue their dreams but are not provided with an accurate understanding of how 'imagery surrounding the knowledge-based economy does not fit with the realities of [the] labour market' (Biggart, Järvinen, and Parreira do Amaral 2015, 41). Among others, the researchers of the European wide GOETE study argued that education policies emphasise young people's individual responsibility for their choices in circumstances that they cannot fully control, thus increasing competitiveness in education, which especially affects young women's feelings of pressure and anxiety in relation to their educational success (42; also Landstedt and Coffey 2017, 350–351).

Despite the intensive public discussion on digitalisation, robotisation or biotechnological innovations, the role of technology in young people's temporal orientation and imaginations of their future selves is largely missing in the current notions of epistemological fallacy and the entrepreneurial mindset (Tilleczek and Srigley 2017). Therefore, we explore in this article how young people relate to the question of technologisation when they talk about the future of work. In the context of work, we understand young people's ideas of technologisation as elementary prerequisites for agency, which we define as their temporally constructed engagement with the question of future, which is formed in the interplay of 'habit, imagination and judgement' (Emirbayer and Mische 1998, 970–971). By using this definition,<sup>1</sup> we call attention to the fact that agency requires an ability to dream and imagine alternative possibilities. Our research task is therefore to make sense of what kind of future working life young people imagine as they move towards it and how these imageries relate to their sense of agency and possibilities for self-realisation.

## Data and methods

The data analysed in this article, considering young people's orientations towards future work, was created in a series of participatory workshops held in educational institutions during 2018 in the city of Tampere<sup>2</sup>, Finland. The topic of these workshops, carried out as part of the research project ALL-YOUTH, related to the future and sustainable development. Our data collection was inspired by the World Cafe methodology (World Café 2018), which has much in common with focus group research with the aim of facilitating informal group discussion 'focused' around a particular topic or set of issues (e.g. Wilkinson 1998). The idea of the World Café is to promote a safe space for the collective sharing of ideas in an open and relaxed atmosphere characterised by the principles of reciprocity and an appreciation of the diversity of perspectives (Carson 2011). In line with these principles, we aimed to create a café-like setting by organising the space into small table groups and providing refreshments in the school classes we visited. The groups consisted of three to five students and one or two facilitators,<sup>3</sup> and the common principles for discussion were presented at the beginning of each workshop.

We conducted these workshops in local educational institutions in three different settings: a general upper secondary school, a vocational college and a group of grade 10 students.<sup>4</sup> Participants in the workshops were 16–18 years of age, and they had finished their obligatory basic education. A majority had continued to the upper secondary level and studied either at general upper secondary or vocational schools. In the Finnish education system, more than half of those who finish their basic education continue to the general level with the possibility of applying to universities, whereas the rest choose vocational education, which provides qualifications for working life and an access to studies at the applied university level. In addition, our sample included students who were studying a voluntary extra year of comprehensive education, grade 10, for additional time to consider educational choices or improve grades. The three educational settings were selected to ensure a variety of perspectives of young people who are about to enter the working life or expected to make critical choices in terms of their professional orientation and educational careers. We assumed this would allow us to explore perceptions of the future work between those orientated toward the academic versus the vocational path and identify inequalities regarding future possibilities. Young women and men were represented almost equally in the overall sample; the mixed group of vocational students from different training programmes (machine and metal industry to small object manufacturing) had a higher percentage of men than the other two groups. Only a small number of participants belonged to racial minorities, which reflected overall Finnish demographics.

In each educational setting, we worked with one class, consisting of 10–20 students. The three workshops consisted of 10 table groups with 42 students (22 females, 20 males); five groups were of mixed gender, three all-female and two all-male.<sup>5</sup> To initiate conversation, we showed short video clips from a series called 'Future at Hand' (YLE 2017).<sup>6</sup> Altogether, three videos were shown and discussed in a two-hour period.<sup>7</sup> The group discussions analysed here occurred after a clip called '2030 – Will a robot replace a worker?'. This video presented a scenario where some traditional occupations had vanished and the main character, unemployed since having lost her job as a truck driver (as the traffic is automated and human drivers are replaced by self-driving cars), was feeling frustrated and considered accepting a job in environmental rehabilitation, which seemed to be the only job available with her professional experience. Hence, the video bears a close resemblance to the ambivalent discourse surrounding the future of work presented earlier in this article. Despite being fiction, the video's scenarios of the future were based on academic research concerning the evaluation of major future trends in the Finnish context. They have been scripted

and produced in a collaboration between the Finnish public service broadcasting company (YLE) and researchers from the BIOS<sup>8</sup> research unit.

The videos were intended to stimulate discussion of issues that might have been otherwise difficult to present consistently across the student groups within the limited timeframe of the workshop. As none of the researcher-facilitators were experts in the discussed future trends, the videos served to spark the participants with an idea of a possible future scenario and, thus, inspire them to reflect their feelings, opinions and visions of the future. The video stimulus influenced the participants' collective exchange of ideas, emphasising themes such as robotisation and the disappearance of some jobs. In addition to looking at the data as a product of a particular social setting, we assume that young people's talk speaks to and emerges from the contemporary ways of understanding, experiencing and talking about the effects of automatisisation, digitalisation and AI (Silverman 2011, 191).

The workshop discussions were dialogical encounters in which we as researchers attempted to be sensitive to the views and knowledge stemming from the everyday life of the young people. We were interested in how they named and identified issues. We had prepared questions to inspire the discussion, but generally allowed it to proceed freely. Instead of trying to capture each participants' personal conceptions of future work, we encouraged them to share their insights and engage in dialogue with each other. We refrained from giving our own interpretations and views, although at the end of each table discussion slot the facilitator reported the key themes to the others in the class.

Our analytical approach to the transcribed data from the group discussions can be defined as theory-driven close reading (Elder and Paul 2009); the themes were formed in a dialogical process between the data and conceptualisations of young people's future orientations in the research literature, such as epistemological fallacy and the entrepreneurial mindset. After the first reading of the data and reflection of the observations against these conceptualisations, we identified three interrelated themes, and divided the data according to them for the analytical close reading. The first presents how the young people discussed the impact of the technologisation on working life, the second deals with the participants' depictions of their own agency in changing working life, and the third their constructions of the division of labour between humans and increasingly autonomous machines. The following sections are organised around these three themes, which, according to our interpretation, document the young people's ambiguous positions in preparing for work life and their envisioning of the future of work, highlighting both receptive and contrasting views regarding prevailing cultural stories of technologisation and digitalisation.

### **We'll need to work – and all should be kept on board**

Young people commented on the prevailing discourses on technologisation, sometimes in a detailed way and other times on a more general level. One of the general traits in the data was the young people's indisputable belief that they now live amid ongoing technological changes, and the pace of these changes will only increase in the future (see also Myllyniemi 2017, 20). There was agreement on this across all educational settings. The young people argued acceptingly this by referring to attributes such as 'efficiency', 'fluency' and 'economic profitability', which point to the approval of the neoliberal values concerning the development of working life. In general, the table groups were in agreement (and accepting of) that especially routine jobs requiring little expertise would disappear and the remaining jobs would involve technological know-how. They were also hopeful that technological advances would create new opportunities and jobs. The following quotation from

a male upper-secondary student illustrates well the wider agreement within the data. Many others used exactly the same wording as he:

We are living in the middle of a structural change. Some branches are due to disappear whereas others will have more jobs and they will also be more technology-oriented in the future. (M, 1U 1)

Even when the young people talked about the inevitability of technological change and loss of jobs, they did not seriously challenge the centrality of work and paid labour in their views of future engagements. Hence, they repeated the paradoxes of the public debates of the technologising working life we presented earlier. Representing one of the extremes, the following extract arose from an exchange after the facilitator had asked whether a person who had lost a job would need to work.

R: Would it then be fair that they (who will be unemployed) don't need to work?

M1: No.

M2: o.

R: So you think that everyone should work?

M1: Yes. (1U 3)

In the above extract, the participants agreed that it would be the fair that everyone worked. In addition, the participants did not challenge the value of work as a form of insurance for a decent life. Regardless of educational level, they saw paid labour as securing the central elements required for a good life: money, a place to live, supporting relationships, social respect, meaningful routines and everyday engagements. These observations mirror the consistent findings of Finnish youth barometers over the past 20 years, according to which 80 percent of young people would rather have temporary work than receive unemployment benefit (Myllyniemi 2017, 59; also Walsh and Black 2017, 76). Hence, despite the turbulence that technologisation is expected to cause to structures of working life, young people seem to regard work as a central feature of their identity, and a means of providing substance to living:

In a way, it is a tempting thought [to have more free time if there is no work]. But then you start to think what there would be left in life. And sure, you would need money. It will be unlikely that you will get it straight through the letterbox. (M, 1U 3)

Taking into consideration the centrality of work, it was interesting how the participants talked about the possible redundancy of a great number of people in working life (see also Kelly 2017; Landstedt and Coffey 2017, 350–351). Some regarded this as a realistic scenario that would demand adjustments from societies and the people. In the following extract, the participants reflect on the work-centred nature of contemporary life and raise the question of how to deal with the possibility of not working and dividing the desired work equally between people.

F3: Very much in society and otherwise in life, too, everything is in a way built around work. That you finish all the schools [...] That you work hard, and that work is the most important thing. I just wonder whether folks are then left with nothing [...]

F2: [...] Sure it [technology] can in a way provide you with more free time, to some extent. On the other hand, we need some professions. So I wonder how can we say that you will need to work but I don't have to. (1U 2)

Moreover, some were concerned about the increasing age-based inequality caused by accelerating technologisation. A decline in low-skilled and summer or seasonal jobs, which provide younger generations with their first access to working life, was brought up as a possible negative consequence of increasing automation, especially on young people's work opportunities (also Tilleczek and Srigley 2017, 275). Another example of the identified disadvantages is visible in the following discussion between male students in the vocational school. They saw their own future occupations as being more at risk than those of more highly educated engineers. They regarded this unfair, and claimed, appealing to an unspecified collective 'we', that something needs to be done to prevent from losing too many jobs.

M1: If we think that in principle, [the name of the company] could possibly function only with robots. But we should not let it go that far, or we would lose the jobs.

M2: Yeah, we would lose all the jobs. Except the engineers. They will get more [jobs], but those without an engineering education, they would lose all the jobs. (2 V 2)

Furthermore, this group expressed concerns for peers who they assumed would not be equally confident working in a highly automated environment. Their discussion on the pros and cons of the development from manual to largely computerised work in their field points importantly to inequalities in terms of work opportunities that start to build early based on technological skill and competence.

M1:... For example, I've noticed that quite a few are scared of that CNC part of our [education]. That [...] whether you'll learn it. Will you learn how to programme that machine.

M2: Basically, they're just numbers too. Units and zeros. They are nothing but that.

M1: But yes, for example, a couple [of peers] have told me that they could go to the installation [program] otherwise but they don't want that CNC lathe or they're afraid of it. Then, I'm always that, yes, you learn it. It's a bit of the same thing when we come here and we don't know yet turning with manual lathes, but now we know it. So we have just as much opportunity to learn to use that CNC lathe machine<sup>9</sup>. (2 V 2)

A few participants in all three contexts demanded that society and decision makers react and make structural adjustments in addressing the expected mass disappearance of jobs. In one table group, the idea of a universal basic income was introduced as a possibility to allow people's self-actualisation in a socially just way:

In principle, it will never be possible, but I would not regard it bad at all if everybody was given a set amount of money, and if they wanted to they could do odd jobs or such, like sell self-made jewellery or whatever. But who knows, maybe it will be possible in the long run in the future. (F, 1U 1)

It can be concluded thus far, that under the surface of neutral and submissive depictions on the need to adjust to technologisation as a transforming force, young people said something more. They saw that somebodies, whether institutions or people, need to take responsibility for the wellbeing of those who do not cope in the competition in technologised working life.

## **I'll do well if I work hard**

The participants were familiar with the grim prophecies on technologisation and were able to pinpoint societal inequalities involved in technology development, thus giving support to survey results according to which getting a job or surviving working life are among young people's biggest worries regarding the future (Myllyniemi 2017, 66–67). Hence, young people are not as ignorant of structural changes as suggested in some interpretations of epistemological fallacy, for example. At the same time, the participants in general remained optimistic about their personal futures. Even if they admitted that work would be a competed-for resource, they were confident in their own ability to cope, as exemplified in the following young woman's view:

We are in a kind of a critical situation in a way, that during our time there will be quite a lot of development and change. Then you'll just need to go in that direction, what interests you, and sure, it is possible to change later. Well, I will not ... I suppose I will be able to do something useful to support anyway, to support sustainable development. It would be nice to do something like that. (F, 1U 4)

Many felt that achieving a respectable position in working life was their own responsibility. For the most part, the young people believed that they should educate and re-educate themselves, work hard and adapt to the new circumstances – and face the risk of a possible failure (see also Franceschelli and Keating 2018, 8S–10S).

Sure, you'll come up with something, you'll just need to develop it. But, of course, there are risks that a human being will become bored and depressed if there are no jobs. (M, 2 V 1)

Then you need to be able to re-educate yourself to some other occupation quickly, efficiently and easily. (M, 1U 3)

The main factors for the participants to secure their prospects seem to be working hard, seizing the society's opportunities (e.g. gaining an education), being flexible and persistently working towards one's aspirations. The young people often positioned themselves as the main agents for achieving their desired future and regarded the developing technology, economic growth and dynamic labour markets as a tool for coping. This individual responsibility mirrors the earlier referenced discussions on epistemological fallacy (see also Cieslik and Simpson 2017, 102–103). As the following excerpt below exemplifies, some participants explicitly stressed the need to be hopeful and to have a positive attitude in facing the unknown, hence bearing witness to the role of entrepreneurial spirit in their orientations towards the future:

I don't think that big threats will come up during our lifetime. At least I hope so. Maybe I could turn the discussion towards a more positive direction, so kind of, as technology will advance, so kind of ... that we would not think so much that people will lose jobs, but that we are in the middle of a structural change, and some things are due to disappear, and in other branches there will be more jobs and they will concentrate on the more technological fields. (M, 1U 1)

Belief in the necessity of staying positive and resilient was more common among students from the upper secondary school, whereas the young people from the vocational college and the 10th grade did not rely on this discourse to the same extent. Some students in the two latter contexts explicitly referred to possible adversities they might experience due to their lower position in the class hierarchy. Moreover, some 10th graders were pessimistic as to whether working life has something to offer for them at all. Hence, as based on our data, the entrepreneurial spirit seems to represent an

acknowledgement of opportunities especially for those whose future horizons rely on high education and position in working life due to flexible set of skills and qualifications (Franceschelli and Keating 2018, 12S–14S).

As the previous quotation on CNC machining highlights, not all young people are comfortable, confident or capable in managing the increasingly technological working environment. For vocational learners in particular, the increasing automatisisation of many professional fields may thus also contribute to the inequality of learning opportunities by precluding certain professions from some students. Overall, the young people expressed the affectual state of hope rather than self-secure optimism in relation to the future. Despite acknowledging the uncertainty, they were *hopeful* that technological advances would create new opportunities and jobs and things would go well for them. Their accounts could be interpreted as indicative of hopeful pessimism (Coleman 2016), as they seem to cling to the hope that technologisation will eventually offer them something good or that work life will provide opportunities for them despite the austere views of current developments.

### **The call for social responsibility**

At the same time, as young people emphasised the need to adjust to structural circumstances, by adopting an entrepreneurial spirit or the mood of hopeful pessimism, they talked powerfully about social responsibility. This was visible in how solidly they resented a future scenario in which human labour would be replaced entirely by robots and/or AI. We name this strong and vigorous claim as *social responsabilisation for a sustainable future of work*. The participants powerfully argued that human labour implies working within human relationships, decision-making, planning tasks with the requirement of understanding complex systems and creativity. AI, by contrast, was seen fit for diverse assistance and routine tasks in factories or transportation, in other words, for lines of work that have been largely touched by the processes of automation already. Many assumed that there is a general agreement among human beings on the above division of labour which was also regarded as sensible:

But if jobs would disappear somewhere, there should be other instances producing more jobs. I assume that the situation will not change before this is secured. Otherwise, it would not be profitable anyway. (M, 1U 3)

In the next exchange, the young men in the vocational college regard the possibility of robots doing all work as ‘scary’, and consequently responsabilise ‘us’ to prevent it from happening. Invoking ‘us’ can be understood as a reference not only to themselves but to a larger community, those controlling technology development:

R: Do you think that in the future things could develop so that we as humans are not needed too much?

M2: Yes.

M1: It looks like that, I’m afraid. For example, they have now prepared the robot who can engage in conversations, can’t remember its name now. I have followed that in the news, the robot has been interviewed, and it has even humane gestures. So, I’m afraid that in principle we can develop robots infinitely. But we should not, we should stop it at some point [...] We should not make the machine too smart, cause then we’ll lose it [...], then it would be a little bit bad for us. (2 V 2)

In some table groups, the discussion dealt with a dystopia in which machines become (too) intelligent and emotive and end up harming people. In general, however, the participants allayed this dystopic view by stating that there will be enough powerful people – whether AI developers, technology companies, decision makers or consumers – with a strong social responsibility to ensure balanced development. This line of thought is visible in the next excerpt, where the participant puts his faith in consumer boycotts:

It is for sure that the development of robots will accelerate all the time, and personally, I don't believe that it will take a long time until it will be possible to replace virtually every occupation. But it is a different thing whether we want it to happen. It can very well be that if there was a company saying that we will replace all the human beings with robots, people would stop buying the products of that company altogether. (M, 1U 3)

The above claim on robots' ability to replace human labour was challenged by other participants who deemed robots inadequate in dealing with human emotions and needs or in performing well in complex cognitive processes. Some talked about the clumsiness of the so-called care robots as an example of the limited potential of the machines to support 'cognitive development' or provide 'intimacy'. In the following quote, a young woman argues that it would therefore be unethical and harmful to introduce robots in childcare.

But if we take a psychological perspective, the care robots are not able to substitute for real intimacy. Using robots in child care would disturb cognitive development and so the child would not develop normally. [...] Social contacts and incentive should not be outsourced to robots. (F, 1U 1)

The above examples involve a powerful moral expectation of the sensibility of technology development to ensure a balanced division of work between humans and machines as well as a sustainable working life in the future. The participants put their hope on unspecified collective agents that would control the ways in which technology fosters good life. Their adoption of the discourse of social responsabilisation for a sustainable future hence involves a moral demand to resist such technological developments that threaten the existence of meaningful everyday engagement for all people.

## **Conclusions**

In this article, based on the interactional World Café workshops, we have studied how contemporary and often paradoxical discourses and trends on technologising work shape young people's future visions. Both the content and volume of the accounts on the inevitability of the technological change and how it was discussed for the most part in a declaratory, taken-for-granted manner, indicate young people's acceptance of being part of a wider trend in which increasing automation will alter the structures of work life during their active work years. Some saw this as a gradual process, and not necessarily an acute question for themselves, while others thought that remarkable reorganisation of work and professions could happen with rather short notice. In addition, young people's utterances partly follow conceptualisations on, e.g. individualistic labour market citizenship, epistemological fallacy and the entrepreneurial spirit of neoliberal capitalism. Identifying their own position in relation to the technologising labour market as ambivalent and uncertain, even prone to risk, young people expressed a mood of hopeful pessimism, which did not expect too much, but was cautiously optimistic of the future.

At the same time, they did not fully embrace this as a preferred direction. They expressed worry for those who cannot cope with the continual flux caused by technologisation. Also important was their demand that decisions and acts of people with power should safeguard the diversity of work tasks and maintain the possibility to develop all kinds of capabilities meaningfully in working life. Accordingly, the young people's accounts reveal a profound need to reimagine and reflect on how work and everyday engagements should be reorganised as part of human wellbeing to ensure sustainability (Hirvilammi and Helne 2014; Hirvilammi et al. 2019). At this historical time, this question truly deserves open and versatile discussion in which young people's voices are heard and analysed.

Young people are able to pinpoint marginalising processes and formulate desired future scenarios involved in technologisation. To deepen their understanding of these issues they need encouragement, ideas and tools to reflect on and envision what AI means as a societal phenomenon and how they can relate to it, not only in terms of conforming but also concerning dreaming and alternative futures. In order for them to realistically think about the future, spaces need to be created for exchanges with young people on the consequences of technologisation and alternative visions (Tilleczek and Srigley 2017, 281). Intergenerational creative openness and collaboration would open up new possibilities for a sustainable and socially just future for humankind.

## Notes

1 This definition is inspired by Emirbayer and Mische's (1998) conceptualisation of human agency as a temporally embedded process of social engagement, informed by the past (in its 'iterational' or habitual aspect) but also oriented towards the future (as a 'projective' capacity to imagine alternative possibilities) and towards the present (as a 'practical-evaluative' capacity to contextualise past habits and future projects within the contingencies of the moment).

2 Tampere is the third-largest city in Finland, with nearly 240,000 inhabitants. It has a history as an industrial city, but today is often referred to as a city of innovation and technology.

3 The group discussions were audio-recorded and then transcribed, with the exception of the two groups that withheld permission. In those instances, researchers made written notes.

4 For the data quotations, the codes 1U (general upper secondary school), 2V (vocational college) and 3C (grade 10) are used to indicate the educational settings. The last digit indicates the discussion group of that workshop.

5 In the study, no personal background information, such as participants' family or socioeconomic status, was gathered. With this choice, we wanted to communicate to the students that our focus was not on individual differences but group discussions as collective output.

6 This is from YLE Finland's 2017 programme series considering climate change: Mission Future (<https://yle.fi/aihe/artikkeli/2017/10/18/tehtavana-tulevaisuus-mista-on-kyse?ref=ohj-articles>).

7 The topics of the videos included: 1) supply of food and eating habits in the future, 2) the effects of robotisation on work, and 3) the effects of climate change on urban space and habitation.

8 BIOS is an independent, multidisciplinary research unit that studies the effects of environmental and resource factors on Finnish society (<https://bios.fi/en/>)

9 Referring to computer numerical control, the automated control of machining tools by computer in the machine and metal industry.

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