FINLAND FUTURES RESEARCH CENTRE • UNIVERSITY OF TURKU

DECONSTRUCTING PARADOXES OF WORK THROUGH CLA

Millennium Project Special Session at FFRC Conference 'Futures of Natural Resources', 13 June 2024, Turku, Finland

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PREFACE

It was especially inspiring to participate in the Millennium project special session organised on the 13th June 2024 at Futures Conference in Turku, Finland, because I have already for decades worked with similar themes that this report discusses. How will the working life develop and especially what the role of AI will be in various possible futures of the working life? The main interest of the Millennium Project since 2015 has been very close to this theme starting from the multi-stage process resulting in the report "Work/Technology 2050". Since then, the main focus of the MP has been how to globally govern the impacts of emerging Artificial General Intelligence (AGI). Jerome Glenn's assertion in the session: "Governing the transition to AGI could be the most complex, difficult management problem humanity has ever faced" prompted the many possible impacts of AGI to be discussed in the frame of five paradoxes of the future working life. As this report describes, the paradoxes were discussed in five facilitated working groups that looked for solutions to the paradoxes using the Causal Layered Analysis (CLA) method.

My most recent ideas concerning the theme of the Session are presented in a book edited by myself and Sauli Rouhinen, to be published in Finnish in October 2024. This book, "New Doctrine of the Survival" is an updating of the insightful ideas that were published already in 1982 by Pekka Kuusi, both in Finnish and in English and later also in Chinese. Though this book, in which also I was involved, found tens of thousands of readers in Finland and through its English translation even attracted Chinese proponents, it was scarcely noticed worldwide. And yet, now the basic ideas that Pekka Kuusi introduced seem to be highly relevant now when the focus of the discussion turns to possible new autonomous AI species, that resemble recent living species.

The basic ideas of the Kuusi (1982) book can be useful in tackling the recent discussion concerning the AGI and the Artificial Super Intelligence ASI. Pekka Kuusi realised in 1982 the same issues that Darren McKee warned about, in his book "Uncontrollable" that discusses AGI and Artificial Super Intelligence (ASI). According to McKee (2023, p.192) "assuming one's foundational goal is to live, then other goals are quickly apparent". Unlike McKee, P. Kuusi understood that this principle is not as suitable concerning single living beings, but rather works well when it concerns the species they represent. According to Kuusi (1982), in order to survive, a species – from bacteria to the humankind or to the autonomous AI - has to handle four interrelated challenges: to find food/energy; to protect itself; to reproduce; and to solve problems that it faces using its information system.

In nearly 500 pages of his book, Pekka Kuusi presented his version of the evolution history of humankind as a species among other species. It was based on the above four basic requirements of life and he named the conclusions of the book the "Survival Doctrine of Humankind". He concluded that in the near future the only really relevant risk for the survival of humankind, was humankind itself. Unlike now, in 1982 the key global problem was the uncontrolled success of human reproduction – the population growth. The global shortage of energy/food was also an urgent problem for P. Kuusi, although he did not yet realise its key connection to climate change. For him, nuclear energy was a transitory solution to this problem. For the survival of humankind, the key security problem was the avoidance of the nuclear war, where Kuusi suggested negotiations between the socialist and capitalist blocs.

Even though Kuusi (1982) did not discuss AI directly, his four basic functions help in the realisation of what is especially crucial for the future relationship between humankind and AGI or ASI (Artificial Super Intelligence). This is highly important to realise that AGI is developing through two dimensions that do not necessary correlate: problem solving skills ("information activities") and autonomic behaviour. For example, a drone might have great skills in problem solving but it cannot manage the other three functions without human help. If it cannot independently find energy, avoid damages and "reproduce" itself, it is not ready for autonomous living associated with a new species. In fact, this is related to a fourth problem that is stressed by the New Survival Doctrine: the recent ChatGPT4, like AGI does not have the motive to

survive, though according to McKee (2023, p. 84), it has already achieved the human level of AGI in information activities/skills for problem solving.

I end this Preface of the MP Special Session report by mentioning some key concepts of the New Survival Doctrine that might be useful in the future when the possible impacts of AGI to the working life will be discussed, they are: collective mental models of institutions, that are crucial for competence capital and social capital in ecosystems impacting on constructed capital and natural capital of ecosystems.

I consider that this Report of the Special Session is indeed worth reading and it opens up new ways to interpret the future interactions between human beings and the rapidly developing AI.

Mäntyharju, Finland 16th September 2024

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ABSTRACT

This report documents the process and results of the Millennium Project Special Session that was organised within the Finland Futures Research Centre (FFRC) Conference in Turku, Finland on 13th June, 2024. The MP Session was conducted within the FFRC research project T-winning Spaces 2035 that is ongoing at University of Turku, studying futures of work, work spaces, and new paradigm of work. The T-winning Spaces 2035 is a research project funded by the Research Council of Finland, and the European Union NextGenerationEU. It is headed by Aalto University with University of Turku and University of Tampere as partners. The Session was organised in co-operation between University of Turku, Aalto University, Millennium project, and the Finnish Society for Futures Studies. The session was arranged as an interactive futures clinique, with initial futures provocation followed by small group working on five paradoxes by applying a new foresight technique called 'paradox probing'. The session thus provided a methodological experimentation where paradoxes were deconstructed via CLA (Causal Layered Analysis) and narratives for five different futures of work were sketched.

Key words: futures of work, AI, paradox probing, futures clinique, causal layered analysis, deconstruction, narratives, Millennium Project

RESUME

Ce rapport documente le processus et les résultats de la session spéciale du Projet Millennium qui a été organisée dans le cadre de la conférence FFRC à Turku, en Finlande, le 13 juin 2024. La session MP a été menée dans le cadre du projet de recherche T-winning Spaces 2035 qui est en cours à l'Université de Turku, étudiant les futurs du travail, les espaces de travail et le nouveau paradigme du travail. Le T-winning Spaces 2035 est un projet de recherche financé par le Conseil de Recherche de Finlande et l'Union européenne NextGenerationEU. Il est dirigé par l'Université Aalto avec l'Université de Turku et l'Université de Tampere comme partenaires. La session a été organisée en coopération entre l'Université de Turku, l'Université Aalto, le Projet Millennium et la Société finlandaise pour les études prospectives. La session a été organisée comme une clinique interactive sur les futurs, avec une provocation initiale sur les futurs suivie d'un travail en petits groupes sur cinq paradoxes en appliquant une nouvelle technique de prospective appelée « sondage des paradoxes » (paradox probing). La session a ainsi fourni une expérimentation méthodologique où les paradoxes ont été déconstruits via CLA (Causal Layered Analysis) et des récits pour cinq futurs différents du travail ont été esquissés.

Mots clés : avenir du travail, IA, sondage des paradoxes, clinique des futurs, analyse causale stratifiée (CLA), déconstruction, récits, Projet du Millénaire

RESUMEN

Este informe documenta el proceso y los resultados de la Sesión Especial del Proyecto del Milenio que se organizó en el marco de la Conferencia FFRC en Turku, Finlandia, el 13 de junio de 2024. La sesión de MP se llevó a cabo en el marco del proyecto de investigación T-winning Spaces 2035 que se está llevando a cabo en la Universidad de Turku y que estudia los futuros del trabajo, los espacios de trabajo y los nuevos paradigmas del trabajo. T-winning Spaces 2035 es un proyecto de investigación financiado por el Consejo de Investigación de Finlandia y la Unión Europea NextGenerationEU. Está dirigido por la Universidad Aalto y cuenta con la Universidad de Turku y la Universidad de Tampere como socios. La sesión se organizó de manera conjunta entre la Universidad de Turku, la Universidad Aalto, el Proyecto Millennium y la Sociedad Finlandesa de Estudios del Futuro. La sesión se organizó como una clínica de futuros interactiva, con una provocación inicial de futuros seguida de un trabajo en pequeños grupos sobre cinco paradojas mediante la aplicación de una nueva técnica de previsión denominada "sondeo de paradojas" (*paradox probing*). La sesión permitió aplicar una metodológica donde se deconstruyeron paradojas a través del CLA (Análisis Causal en Capas) y se esbozaron narrativas para cinco futuros diferentes del trabajo.

Palabras clave: futuros del trabajo, IA, investigación de paradojas, Futures Clinic, análisis causal en capas (CLA), deconstrucción, narrativas, Proyecto Millennium

INTRODUCTION

This report presents the process and results of the Millennium Project Special Session as organised within the Finland Futures Research Centre (FFRC) Conference in Turku, Finland. The topic of the conference was 'Futures of Natural Resources', held on 4th (virtual), and in person 13th and 14th June 2024[1]. The MP session was conducted within the FFRC research project T-winning Spaces 2035 at University of Turku. The consortium consists of the Aalto University as co-ordinator, headed by Associate Professor Saija Toivonen, and University of Tampere and University of Turku as partners. The University of Turku partnership is conducted at FFRC under the supervision of professor emerita Sirkka Heinonen. This three-year project has received funding from the Research Council of Finland and the European Union - NextGenerationEU instrument (decision # 353326). The project studies winning spatial solutions for future work, enabling double twin transition of green/digital and virtual/physical transforming our societies by 2035. CEO of the Millennium Project, Jerome Glenn is a member of the project's advisory board and he gave a keynote onsite in the beginning of the session.[2]

The Millennium Project[3] is a global participatory think tank established in 1996 under the American Council for the United Nations University. The Millennium Project became independent in 2009 and now it has grown to more than 70 Nodes around the world, connecting futures thinkers around the world and collaborating to improve global foresight. Its purpose is to improve humanity's prospects for building a better future. Its mission is to improve thinking about the future and make that thinking available through a variety of media for feedback. Thus, wisdom about the future for better decisions today is getting accumulated. The Millennium Project has a vision where the global foresight network of MP Nodes, information, and software, are building a global collective intelligence system, recognised for its ability to improve prospects for humanity. It is a think tank on behalf of humanity, not on behalf of a government, or an issue, or an ideology, but on behalf of building a better future for all of us.

Jerome Glenn is directing the Millennium Project with the help of the Planning Committee since 1996. The project publishes State of the Future reports, Future Research Methodology and runs a global futures intelligence system.

What is currently important to consider is that the Millennium Project has been working with the Executive Office of the United Nations Secretary-General to assess implementation of the foresight elements of their report "Our Common Agenda" (United Nations 2021). The Millennium Project is to a great extent focused on calling for regulations for the transition from the Artificial Narrow Intelligence (ANI) to Artificial General Intelligence (AGI). The Millennium Project attempts to stimulate national parliaments to begin writing legislation, in order to establish government rules for the development and the use of future AGI; to catalyse efforts and create supranational coordination and governance of AGI before AGI arrives. These initiatives could be pushed forward with the following measures:

a) Advocate for the European Parliament to start working on an EU AGI Act (an EU AI 2.0 Act);
b) Educate national legislators about the distinction between requirements to manage AGI vs. current forms of AI; and
c) Advocate for a UN Resolution, to form a committee of the willing to write regulatory framework.

One of the very useful and basic frameworks that the Millennium Project is using is the 15 Global Challenges[4] since it shows the world as a holistic system. The 15 Global Challenges provide a framework

1 See https://futuresconference2024.com
2 Jerome Glenn gave virtual keynotes in two preceding MP Sessions during FFRC Conferences (2022 & 2023). Please see a report documenting their results (Heinonen et al. 2023b).
3 For the Millennium project, see at https://www.millennium-project.org
4 https://www.millennium-project.org/projects/challenges/

to assess the global and local prospects for humanity. A brief overview of each challenge, a list with actions to address them, and regional considerations are continually updated with improved insights since 1996. The 15 Global Challenges are a result of continuous research, Delphi studies, interviews, and participation of over 4,000 experts from around the world. Recently Millennium Project has also been engaged in studying Anticipatory Governance, Artificial Intelligence, as well as Futures of Work and Technology – Scenarios 2050 (Glenn & Millennium Project Team 2019).

In the following figure, UN Sustainable Development Goals and Millennium Project Challenges are positioned and compared as regards their thematique.

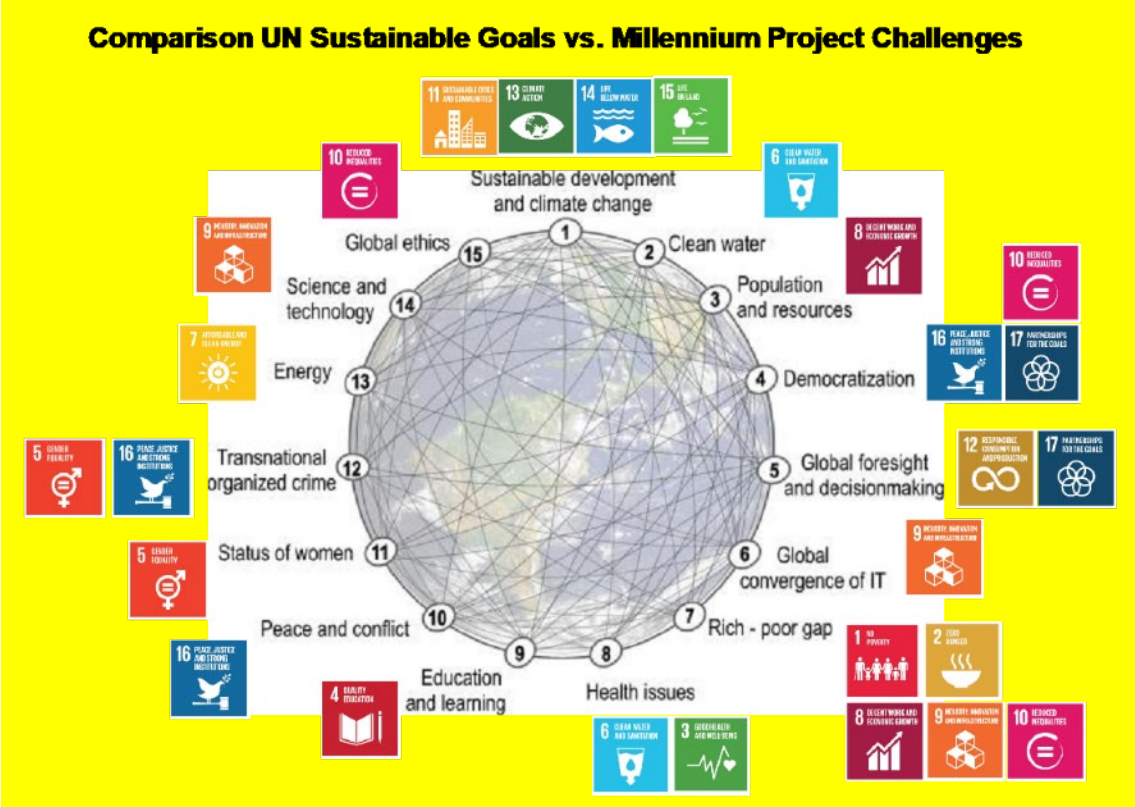

Figure 1. *The Millennium Project's 15 global challenges as reflected towards the 17 UN Sustainable Development Goals.*

The Millennium project publishes State of the Future Reports. The most recent one the "State of the Future 20.0" (Glenn & the Millennium Project Team 2024) contains the updated 15 global challenges, the State of the Future Index, discussion on UN foresight, World Future Day, reflections on AGI (Artificial General Intelligence) and on the future of Robots.

The Millennium Project acts as an officially collaborating network in the T-Winning Spaces Project 2035. The full name of the project is *Winning spatial solutions for future work, enabling the double twin transition of digital/green and virtual/physical transforming our societies by 2035*. The wider framework for this research project tackles the green and digital transition as declared by the European Commission. Jerome Glenn is member of the advisory board of the T-Winning Spaces Project 2035. Many MP Node chairs and members have been also been involved as interviewees.

"Governing the transition to AGI could be the most complex, difficult management problem humanity has ever faced," says Jerome Glenn, CEO of the Millennium Project. To which Stuart Russell, leading AI expert at University of California, Berkeley adds: "Furthermore, failure to solve it [AGI management] before

proceeding to create AGI systems would be a fatal mistake for human civilization. No entity has the right to make that mistake." (Glenn & the Millennium Project Team 2024)

Work as a key sector in society is undergoing transformation, especially within the twin digital and green transition (EU strategic areas). 'Futures of work' have been extensively explored in the field of future studies.[5] We are, however, now entering the next stage where novel drivers and new complex phenomena arise, such as a technological revolution, the effects of AI on work, or a sustainable green transition.

During the Conference organised by Finland Futures Research Centre (FFRC) on 'Futures of Natural Resources' 13th -14th June in Turku, professor emerita Sirkka Heinonen from the Millennium Project Helsinki Node conducted a Special MP Session for the T-winning Spaces 2035 Project. Her organising team consisted of Paula Pättikangas, Amos Taylor, Riku Viitamäki, Juho Ruotsalainen and the Millennium Project Intern Samaneh Ebrahimabadi, all from FFRC Helsinki office. Moreover, Mikkel Knudsen from FFRC Turku office, as well as Lassi Tähtinen and Nele Korhonen from Aalto University participated in this task. The Finnish Society for Futures Studies (FSFS) as one of the organisers, was represented by its acting secretary general Riika Räisänen. Osmo Kuusi and Sirkka Heinonen welcomed the participants to the session onsite in Turku.

The authors of this report, in their role as the organisers, wish to give credit and acknowledge all the participants for their insightful contributions to the session. They also want to accredit those individuals who were involved in the planning, implementation, and documentation of the events (see the Acknowledgements below).

The Millennium Project session was organised in co-operation between FFRC/University of Turku, Aalto University, Millennium Project, Helsinki Node of the MP, and the Finnish Society for Futures Studies. This report summarises the key outcomes from the 2024 Session. It begins by highlighting the important prelude presented by the keynote speaker – Jerome Glenn, as well as by futures provocation, made by Sirkka Heinonen. The report then outlines the results generated by the various working groups during the session. Finally, it ends with a brief analysis and concluding remarks.

The purpose of this report is to provide a thorough and comprehensive account of the Millennium Project Special Session that was executed as a Futures Clinique (Heinonen & Ruotsalainen 2013). This is done with the intent of preserving all the insights and ideas that were generated and shared during the session, so that they can be utilised further by students, stakeholders, and other interested parties. Additionally, the report includes a detailed description of the methodologies and processes that were employed within the session. The results contribute to the research in the T-winning spaces 2035 project.

Acknowledgements

As authors of this eBook, we express our sincere gratitude to all those who kindly contributed in various ways to our work, in terms of time and insights, in particular the T-Winning Spaces 2035 Project researchers, all the participants and moderators of the Millennium Project Special Session. Special thanks go to Jerome Glenn from the Millennium Project, for the keynote he gave at the Millennium Project Special Session and for commenting the work of all the small groups. We are also grateful to Osmo Kuusi for contributing to the planning and implementation of the sessions, and being a special advisor in our project. Thanks also go to Juho Ruotsalainen for participating in the rehearsal session, and to Samaneh Ebrahimabadi, our Millennium Project Intern at FFRC Helsinki Office for documenting the discussions and photographing the sessions as well to Anne Arvonen for the design and the layout of the whole publication at FFRC Turku office. Kristiina Kumpulainen from Savo Consortium for Education also contributed to this reporting phase. For the funding, we thank the Research Council of Finland (decision # 353326) and the European Union NextGenerationEU.

[5] Within the T-winning Spaces 2035 project a literature review was made, the results of which will be published separately.

MP Special Session 2024

During the recent years of Futures Conferences run by the FFRC, there have traditionally been Millennium Project Special Sessions organised around the chosen topics.[6] For this session, we chose to address paradoxes of futures of work and deconstruct them via CLA. Thus, experimentation was made with the new foresight method 'paradox probing' that we have been developing within the T-winning Spaces 2035 project. Paradoxes can be used as promising tools for exploring non-explicit socio-cultural and techno-economic developments as well as for deconstructing assumptions. This is because paradoxes may point to ruptures and emerging disruptions that will shape the new paradigm of work. Consequently, such proactive scrutiny will create ability to better foresee them.

The workshop participants were invited to delve deeper into the paradoxes and deconstruct them utilising the CLA (Causal Layered Analysis) method in small interactive groups. The participants were furthermore encouraged to think of new and radical ways to construct the meaning of work. The futures studies positioning overall employed in this approach was to support critical and transformational perspectives where transformations are identified and critically engaged rather than prescriptive or planning aspects (see more specific contextualisation in the end of chapter 1.3).

Keynote of Jerome Glenn on Future Work and Future AGI

As an introduction to this foresight exercise, a keynote was first given by Jerome Glenn, CEO of the Millennium Project highlighting the implications of ANI (Artificial Narrow Intelligence) evolving into AGI (Artificial General Intelligence), based on a recent MP Study.[7] Glenn himself has been addressing the theme of Artificial Intelligence already decades ago, as can be seen in his book on Future Mind (Glenn 1989) and he has been consulted by the European Commission on the topic (Glenn 2023).

"The most difficult and complex management issue we have ever faced is this transition to AGI"

Jerome Glenn

AI is evolving. Glenn highlighted the blurred boundaries between narrow and general AI, noting that the transition from narrow to general AI is where humans can have the most impact. He emphasised the urgent need for regulation. Glenn suggested that by 2030, the unemployment shock from AI would be evident. By 2035, the costs and income associated with a universal basic income (UBI) scheme could differ from today's estimates. Glenn accentuated the need for cash flow projections to ensure the financial sustainability of universal basic income, stating that he has not seen such projections from any country. He argued that the current situation is different from previous technological disruptions due to factors like the accelerated rate of change, the synergies between various new technologies, the existence of a global platform, the standardisation of databases and protocols, the empowerment of billions of people in free markets, and the ability of machines to learn and perform tasks better than humans.

Glenn discussed three different scenarios related to the future of work and the impact of artificial intelligence (AI) (Glenn & Millennium Project Team 2019). The first scenario suggests a continuation of the current 'smart and stupid' state of affairs. The second scenario paints a bleak picture, depicting a future where people are 'stupid.' However, the third scenario is where things 'work.'[8] One of the key factors in the third scenario is the use of an AI avatar that can autonomously create smart contracts on the internet,

[6] For the Millennium project Special Sessions of the years 2022 and 2023, please see Heinonen et al. 2023.

[7] Glenn & the Millennium Project AGI Team 2023.

[8] See also Kuusi & Heinonen 2022 for addressing the transition from ANI to AGI as seen in these MP scenarios on work and technology.

allowing individuals to make a living by being themselves. Glenn suggests that people should view themselves as a 'holding company' with various aspects, each of which can be monetised in different markets around the world.

Then, an overview of the three phases of the Millennium project research on artificial general intelligence (AGI) was provided. The first phase involved 22 questions that were posed to 55 experts worldwide, resulting in a comprehensive document that addresses various issues, from information warfare to unemployment. (Glenn & the Millennium Project AGI Team 2023). The second phase focused on developing specific regulations and governance structures, which have been shared with parliaments and decision-makers around the world, with the goal of sparking a collaborative global effort to address the challenges of AGI (Glenn & the Millennium project AGI Team 2024). The second phase of the study on the governance of the transition from ANI to AGI assessed 40 ways and 5 governance models. The third phase will present five very different scenarios.

In this phase 2, five governance models are proposed to address the challenges of artificial general intelligence (AGI) development and deployment. The first model suggests a multi-stakeholder body, or "TransInstitution", which would partner with a system of artificial narrow intelligences (ANIs). Each ANI would be responsible for implementing specific functions and requirements, with continual feedback provided to the human members of the multi-stakeholder body and national AGI governance agencies. This model received the highest rating, with 51% of the panel considering it as very high or high in effectiveness.

The second model proposes a multi-agency approach, with a United Nations AGI Agency serving as the main organisation. Some governance functions are managed by other international bodies such as the International Telecommunication Union (ITU), the World Trade Organization (WTO), and the United Nations Development Programme (UNDP).

The third model envisions a decentralised emergence of AGI, similar to the way the internet has developed, where no single entity owns or controls the technology. This would involve the interactions of many AI organisations and developers, like SingularityNet. The fourth model suggests concentrating the most powerful AI training and inference chips into a limited number of computing centres under international supervision, with a treaty granting symmetric access rights to all countries party to that treaty.

Finally, the fifth model proposes the creation of a UN AI Agency with two divisions: one for artificial narrow intelligence ANI, including frontier models, and a second division specifically for artificial general intelligence AGI.

Glenn emphasises the urgency of this issue, stating that simultaneous action on the regulatory front is required globally. This is because **no single entity has a complete understanding of how to address the challenges posed by AGI yet**. He proposes a multi-stakeholder approach to this UN agency, which would involve developing regulations for four key groups: developers, governments, the United Nations, and end-users. These regulations would include requirements for safety testing, licensing systems, international standards, and accountability measures similar to those in place for the aviation industry.

Glenn also presented some paradoxes as tailor-made for this MP session upon request by the T-winning Spaces 2035 project (Glenn 2024). These included the paradox that AI-driven automation could cause unemployment, yet also free us to create new forms of meaningful work and a **self-actualization economy**, as outlined in Scenario 3 of the World/Technology 2050 report.[9] Another paradox was that future advancements in artificial intelligence could either save civilization or pose an existential threat to it. Moreover, he depicted the paradox that the high costs of AI production may be offset by the significant cost savings it provides to users. As the last paradox that Glenn proposed to the participants was this:

[9] Glenn & the Millennium Project Team 2019.

future AI capabilities could vastly concentrate power in the hands of a few, or conversely, lead to a more globally decentralised distribution of power and decision-making.

To sum up his keynote for this session, Glenn stressed the critical importance of creating governance for artificial general intelligence (AGI) before it arrives, as it would be too late to do so after its arrival.

Figure 2. *Jerome Glenn giving his keynote on future work and future AI (photo: Samaneh Ebrahimabadi).*

Futures Provocation to Highlight Open Futures Thinking

After Glenn's keynote talk, Sirkka Heinonen presented her futures provocation (Heinonen 2024), which is one of the key elements in running a futures clinique.[10] The aim of a futures provocation is meant to stimulate and open up futures thinking boldly and widely, both creatively and critically (Balcom Raleigh & Heinonen 2018). Futures provocation is intended to activate participants to deepen their futures thinking. Provocation as a term is based on the Latin phrase: pro + vocare – literally meaning a call to bring forth futures (futures thinking, ideas, and action). Futures provocation challenges participants:

- to think and see differently
- to think about alternatives → use the peripheral vision
- to think about systems, holistically → expand the horizon
- to think about cause-and-effect relationships
- to think about disruptions and new avenues and openings (Heinonen 2014).

[10] Heinonen, Sirkka & Ruotsalainen, Juho (2013) Futures Clinique – method for promoting futures learning and provoking radical futures. European Journal of Futures Research 1:7 DOI 10.1007/s40309-013-0007-4

Figure 3. *Futures provocation encourages you to bend your mind and body towards bold and radically open futures thinking. (Photo: Sirkka Heinonen)*

Through these introductions, the workshop participants were invited to critically ponder some of the paradoxes representing the current paradigm of work. A futures window showing visual weak signals was simultaneously screened in the background (for the futures window see Heinonen & Hiltunen 2012).

Heinonen explained that this session is organised as a futures clinique, a type of foresight process developed from the futures workshop into a specially structured format. She explained how the goal of the session was to engage in a methodological foresight exercise combining the paradox probing and the Causal Layered Analysis (CLA) approach to gain an understanding of current work paradigms through deconstructing paradoxes of work and on that basis to show light on future trajectories and manifestations of futures of work. The participants were not only asked to deconstruct the paradoxes using CLA in small interactive groups but also to reconstruct and to create new narratives for futures of work. Basic principles of CLA were opened up for the participants.

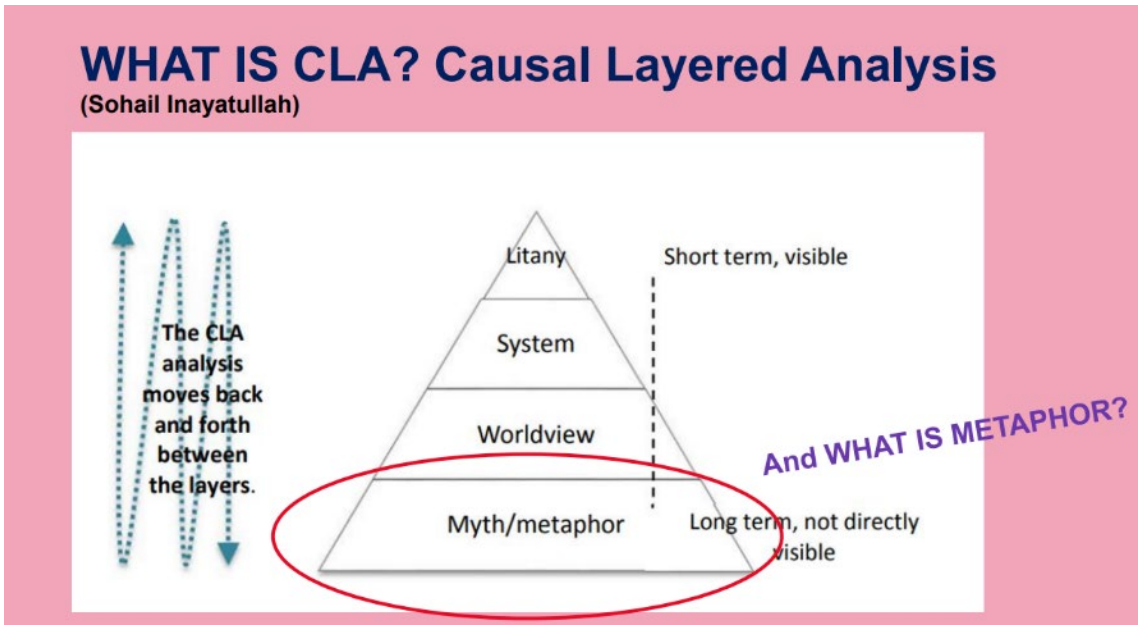

Figure 4. *CLA in a nutshell - presenting the four layers, and the metaphor as our core focus of interest.*

Heinonen also provided a detailed overview of the workshop format and instructions for the exercise. Participants would be divided into five groups, each exploring a different paradox. The paradoxes were 1) "Green and Digital," 2) "Work-Life Balance," 3) "Back to Basics," 4) "Control," and 5) "Automation and Work." Each group would first deconstruct their assigned paradox using the four levels of CLA: Litany, System, Worldview, and Metaphor. After that, the most critical step was to identify a powerful metaphor to capture the essence of the whole paradox in the current form.

In the second part of the workshop, participants would then use that deconstructed metaphor as a springboard to envision a preferred future. For the purpose, they were asked to think how to transform the metaphor to better describe the preferred future and also look at the other three CLA layers to fit the new metaphor.

The third part of the futures clinique was aimed at developing and describing a brief narrative of how that future state (their chosen preferred future within or despite the original paradox) would look like. Heinonen emphasised that the goal is to gain a deeper understanding of current work paradigms by probing these paradoxes and using the CLA methodology to uncover new insights and possibilities. While some participants were already familiar with CLA, it was not a prerequisite, as Heinonen presented the main idea and four layers of CLA in her futures provocation. The moderators in each group would also repeat the task instructions and guide the process. The participants were encouraged to embrace the tensions and contradictions inherent in the paradoxes, as these could serve as catalysts for deeper thinking and transformative ideas. The results of small groups elaborations are presented in Chapter 2.

Rationale for Paradox Probing

Heinonen also opened up the new method ‘paradox probing’ in her futures provocation. Paradoxes are seemingly illogical statements - almost synonyms for contradictions or tensions. Paradoxes can help us in thinking deep and deconstructing present assumptions – they tease you into re-thinking phenomena (Heinonen et al. 2024). Humans are usually searching for certainty and order in their actions, but paradoxes threaten that order (Andriopoulos 2003). The suggested paradox probing method proposes using paradoxes for sense-making of transformation and complexities – finding pathways through the paradoxes if we can understand what is happening and are prepared to act accordingly. This novel method we call

'paradox probing' with the intent of acquiring foresight insights of possible futures and of using those findings for action – to shape preferred futures.

Figure 5. *Sirkka Heinonen presented her futures provocation (photo: Samaneh Ebrahimabadi).*

The workshop was designed to be a dynamic, interactive experience, blending foresight, systems thinking, and creative problem-solving to explore the complex and evolving nature of work in the 21st century.

Positioning the MP Session and Its Results

Before presenting the results for the reader in the next chapter, here is a brief recapitulation of the positioning of the MP session and its results. First, this MP Session and the foresight exercise conducted within it is directly linked to the work package that the FFRC is in charge of in the T-winning Spaces 2035 project. Thus, the futures insights gained will be disseminated to the whole consortium. Second, this session is part of a continuum and combination of several efforts made within the project such as literature review and expert interviews (both as in-depth interviews and a Delphi). Furthermore, this exercise also draws from previous futures cliniques such as the one held in Paris during the World Futures Studies Federation 2023 conference[11] and a presentation given at the conference held at Trento University[12].

Furthermore, there is a link with other foresight exercises and experiments, previously conducted with CLA as applied in futures cliniques or other hybrid constellations (e.g. Heinonen et al. 2024b; Minkkinen et al 2022). Accordingly, different sources were used to plan and execute this session. All these interlinked rivers flow in the foresight sea of 'critical and transformative futures studies' (for different theories in futures studies see Minkkinen 2020).

As reflected onto the Foresight Diamond by Popper (2008, 66), the paradox probing method is situated in the upper core of the diamond. This means it leans more towards the dimension of creativity instead of evidence, which is hard to get due to the subjectivity of the nature of paradoxes. Whereas along the opposing dimensions of expertise and interaction, the paradox probing is right in the centre, drawing on both equally. As contextualised into the methodological framework of different approaches in the methods book by the Finnish Society for Futures Studies (Heinonen et al. 2017) the paradox probing method falls

[11] WFSF Conference, Paris 2023, https://wfsf2023paris.org/session/imagine2-27-october-1000-1100/
[12] Discovery of the Future, University of Trento 2024, https://event.unitn.it/discovery-future/#programme

appropriately into the niche of expert-knowledge based evaluation (along with e.g. CLA) within futures workshop processes. In the Millennium Project's Futures Research Methodology 3.0 (Glenn & Gordon 2009) there are, besides an introductory and synthesising chapter, chapters of individual techniques as well as of methodological clusters. The paradox probing would perhaps best fit into systems perspective. This is because while paradoxes are mainly related to some area, e.g. as perceived from the PESTEC framework, their spheres of influence are deeply systemic, touching whole-of-society.

Finally, within the scope of Roberto Poli's recent Handbook of Futures Studies, the paradox probing could fit well into several categories. Poli (2024) included chapters that open up first understanding futures studies and then using futures studies. Furthermore, he presents chapters on policy, corporate and social foresight. One might be tempted – after the experiences obtained so far from the exercises such as this MP Session – to use the paradox probing method tailor-made to address all the three last-mentioned niches. Its application would then need specific modifications which would be an excellent topic for further experimentation. Through the lens of a wider contextualisation, the specific approach chosen in our T-winning Spaces 2035 project and this MP Session is based on the elements of experimentation, deconstruction, rethinking, resilience and striving for preferred futures.

RESULTS OF THE WORKING GROUPS

There were five tables, with about six persons plus the moderator at each table displaying a large worksheet. Each group engaged in moderated discussion and was given one paradox to work on, as well as a litany, given as an example and starting point for discussion and elaboration.[13] Each small group deconstructed a paradox using CLA (Causal Layered Analysis), transformed the metaphor level, addressed briefly the other three CLA layers as well, and through that process created a new narrative (instructed to feature possibly as a brief like a haiku or pitch for a movie) as the final step.[14]

The five Paradoxes were beforehand chosen from the T-winning Spaces 2035 project data sets for this session. The data sets used were a literature review, interviews, and Delphi Round 1 results. The project team deliberated on possible paradoxes and came up with the following five paradoxes, since they largely also represent different PESTEC aspect of future work. The five paradoxes thus selected for this session were given to the groups to reveal a New Paradigm. They were the following[15]:

1. Paradox of Green & Digital

Digital work expected to reduce environmental impacts, but it also generates environmental harm. Digital is invisible, so how to get people to understand environmental effects of this technology?

2. Paradox of Work/Life Balance

Work takes on qualities of leisure and hobbies, while leisure adopts characteristics of work. How you associate place with work or leisure, affects your wellbeing.

3. Paradox of Back to Basics

The more we spend time in the digital world, the more we appreciate physical contact and analogue solutions. Digital life harbours danger for mental health, if they are totally bound by digital, they need a possibility for escape.

These basics are related to places (slow, simple, silent, as long as the basic needs are provided (safety, shelter, food), true satisfaction is from interaction with family and friends, not from material goods.

4. Paradox of Control

The work becomes more creative and autonomous, while also workers are increasingly being surveilled through digital means for control and efficiency. This is due to lack of trust and leaders' self-legitimacy. Leaders' insecurity leads to stricter control though digital means in lieu of trust. Surveillance for efficiency takes place at the expense of creativity.

5. Paradox of the Automation of Work and Artificial Intelligence (AI)

Automation and AI both replace and intensify human work. Instead of flourishing for human capacity there can be a loss of attention span and mass unemployment. Previous replacement of heavy and unhealthy work is a positive outcome, but very soon automation and AI has taken away skilled creative work. Opposing trends: some lose their jobs, while others' abilities enhanced.

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[13] If there would have been more time allotted to the session, the groups would have been asked to discover themselves first what litany they would like to use.

[14] Since our data contains metaphorical elements and figurative speech, it warrants variety of interpretations. We base our interpretations on workshop sheets and audio recordings. However, we acknowledge that our reading of the data is not the only possible one.

[15] The project team also ran a desktop rehearsal round with paradoxes after which, the choice of paradoxes was sealed.

AI creates poetry and paints pictures while humans are left with menial jobs.

While the groups were discussing and filling out the CLA worksheet with post-it-pads, Jerome Glenn and Sirkka Heinonen circulated visiting and briefly intervening in each group. This is also an integral and interactive element in futures clinique process. At the end of the session, the groups presented their results in a nutshell to other groups: the paradox they had worked on, the old metaphor they started with, the transformed metaphor they created, and the new narrative. This phase in the futures clinique is called cross-fertilisation (Heinonen & Ruotsalainen 2013). The groups not only hear each other's presentation, but also get feedback and additions to their own group results. After each group's presentations, Jerome Glenn provided some additional points and feedback on their results.

Group 1: Green and Digital

This group was moderated by Mikkel Knudsen, project researcher at Finland Futures Research Centre (FFRC), University of Turku. The participants of this group are listed in Appendix 4.

Phase 1 – Deconstructing Paradoxes of Work through CLA

Phase one started with the moderator instructions for small group working, describing the paradox given to this group – Green and Digital:

Digital work expected to reduce environmental impacts but it also generates environmental harm. Digital is invisible, so how to get people to understand environmental effects of this technology?

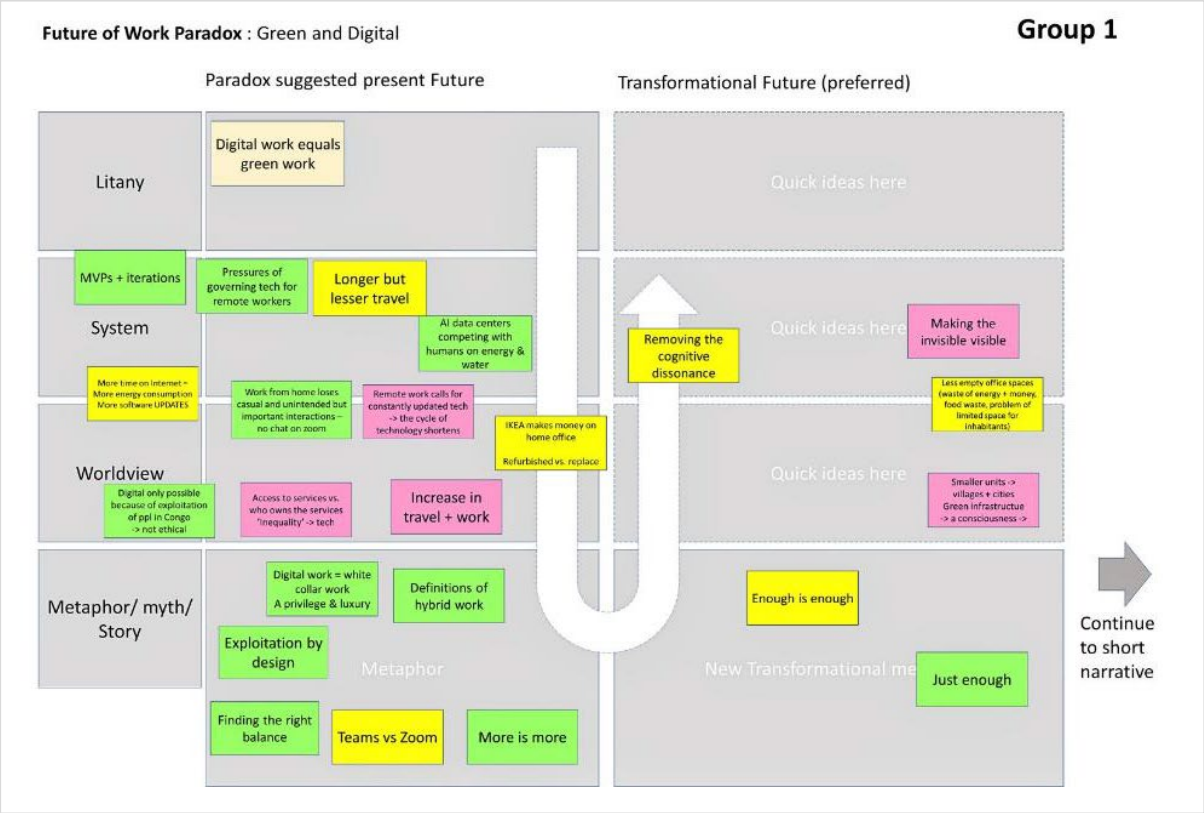


Figure 6. *Results of elaborations of Group 1.*

As the **litany**, the group started with this given example: "Digital works equal green work".

By increasing the possibility of working from anywhere, the litany suggests, society is becoming increasingly sustainable. Having a group of international people with various backgrounds instantly highlighted the diversity between access and perceptions of remote work. The setting of the MP workshop therefore served as an interesting addition to the Finnish context in which most of T-winning Spaces is considered. There was a general consensus in the group that this litany is not necessarily the case. The group brought up several counterpoints to this litany. They noted that "work from home loses casual and unintended but important interactions – no chat on Zoom", suggesting that the social and collaborative aspects of work are diminished in remote settings. Additionally, they pointed out that "AI data centres [are] competing with humans on energy & water", indicating that the digital infrastructure required for remote work can have significant environmental impacts.

Furthermore, the participants discussed the "pressures of governing tech for remote workers", noting that this introduces new organisational challenges that are distinct from governmental governance frameworks. They also reminded that "longer but lesser travel" can occur when working remotely, as workers need to travel more frequently to maintain social connections, potentially negating the environmental benefits of reduced commuting.

The group also questioned the sustainability of "MVPs + iterations" and the notion that "more time on the Internet = more energy consumption and more software updates". They argued that the emphasis on minimum viable products and rapid technological iterations can contribute to a shortening of the technology lifecycle, leading to increased energy consumption and software updates, which may undermine the overall sustainability of digital work environments.

Furthermore, the participants highlighted how "remote work calls for constantly updated tech -> the cycle of technology shortens", as individuals require their own personal devices and gadgets to work from home, rather than being able to share resources in an office setting. This trend further exacerbates the environmental impact of digital work.

The group discussion was indeed in line with the CLA philosophy, where the litany itself is often superficial and this discussion deconstructed and questioned the litany itself. CLA encourages deconstruction at all layers.

On the level of **worldview**, one participant pointed out that "digital [work] is only possible because of the exploitation of people in Congo", suggesting that the underlying extractive and unethical practices required to support digital technologies undermine the notion of "green work". This raises questions about the true sustainability and ethics of digital work.

Additionally, the group discussed the issue of access and inequality, noting that "access to services vs. who owns the services 'Inequality' $\rightarrow$ tech". They highlighted the stark gap in access to digital technologies, with a significant part of the global population still lacking access to basic computing and communication tools. Meanwhile, the companies that provide these services have become increasingly concentrated and profitable, exacerbating economic inequality.

Group 1 also addressed the impact of remote work and increased travel, observing that "increase in travel + work" has led to the rise of "digital nomads" and a corresponding increase in air travel, potentially negating the environmental benefits of reduced commuting. Furthermore, they noted that remote work has led to increase in certain consumption categories, with "IKEA [making] money on home office, refurbished vs. replace", which again underlines that new patterns of work may shift environmental footprints rather than minimise them.

Finally, much of the discussion revolved around how the framing of remote work centers on an elite group, where not all groups in Western societies have the option of working from home. Furthermore, this would not be possible without the labor contributions of, as was the example mentioned, the children working in the cobalt mines in Congo. While the future timeframe could generate some hope for increased global equity, the group did not foresee radical changes to these imbalances by 2035.

Regarding the **Myth/Metaphor**, the group discussed the evolving "definitions of hybrid work", observing that many companies are now seeking to bring employees back to the office, even as workers have grown accustomed to the benefits of remote work.

One participant noted that "digital work = white collar work, A privilege & luxury", highlighting the perception that remote and digital work is primarily accessible to a privileged class of "white collar" workers, while overlooking the broader societal implications and potential exclusion of other segments of the population. The group further explored the notion of "exploitation by design", suggesting that the push for hybrid work models is geared towards maintaining office space and associated costs, rather than a genuine commitment to employee well-being or environmental sustainability.

Interestingly, within the group, there was a hint of a generational dynamic: What seemed like the youngest person in the group did not quite perceive the dark sides of remote work in the similar fashion as others. For her, remote work not only offered a degree of freedom, it also seemed like the normal situation (she had never worked differently) rather than the result of a recent shift. In other words, remote work is not an alternative to a status quo, but something to which there is no real alternative.

Underlying these discussions were broader themes of "finding the right balance" between sustainability priorities, the tensions between "Teams vs Zoom" as preferred collaboration tools, and the potential pitfall of a "More is more" mentality, that "the more green and digital work gets, the more consumption" it fuels. This metaphor suggested a pattern of ever-increasing consumption, where more is just more and people develop greater appetites to consume. Then the proliferation of digital tools and platforms may not necessarily translate into environmental outcomes.

The metaphor that the group selected was **'more is more'** – technological solutions offer efficiency, but because we humans do not opt for sufficiency, we end up adding more layers until the end result is a higher stress on both humans and planet. The evolution of what a Google search looks like now compared to 20 years ago was brought up as an example. It used to look clean and simple, now it is full of ads and even AI-assisted suggestions. Are the added functionalities really an improvement for society or for the users?

Phase 2 – Transforming the Metaphor

In the second phase, the group shifted towards a contrasting metaphor, one of **"enough is enough"** or **"just enough".** One of the participants acknowledged that this metaphor represented a move away from the relentless drive for maximisation, which had a somewhat capitalist flavour. There was a tendency toward a vision of greater balance among the group.

At the worldview level, the participants discussed potential for a shift towards "smaller units → villages + cities, green infrastructure → a consciousness →".

One participant noted the potential benefits of "less empty office spaces (waste of energy + money, food waste, problem of limited space for inhabitants)". This reflects a worldview that recognises the significant environmental and economic costs associated with underutilised office spaces.

Moving to **system level**, the participants suggested "making the invisible visible" – that you need to understand it is there, like the consciousness. You need to make it relatable for people, visible to people. This point deals with the need to shift societal worldviews and raise awareness about the complex systems and interdependencies that link the tension between environmental sustainability and the spread of digital technologies.

Furthermore, Group 1 identified a key issue of "removing the cognitive dissonance". They illustrate this point where there is a massive gap, and that is why we cannot relate to the value of a bird that has not been sighted in the city for 30 years suddenly coming back after two months because your whole public

transportation system has shut down because of the pandemic. And that is not something we can really consciously comprehend at the moment.

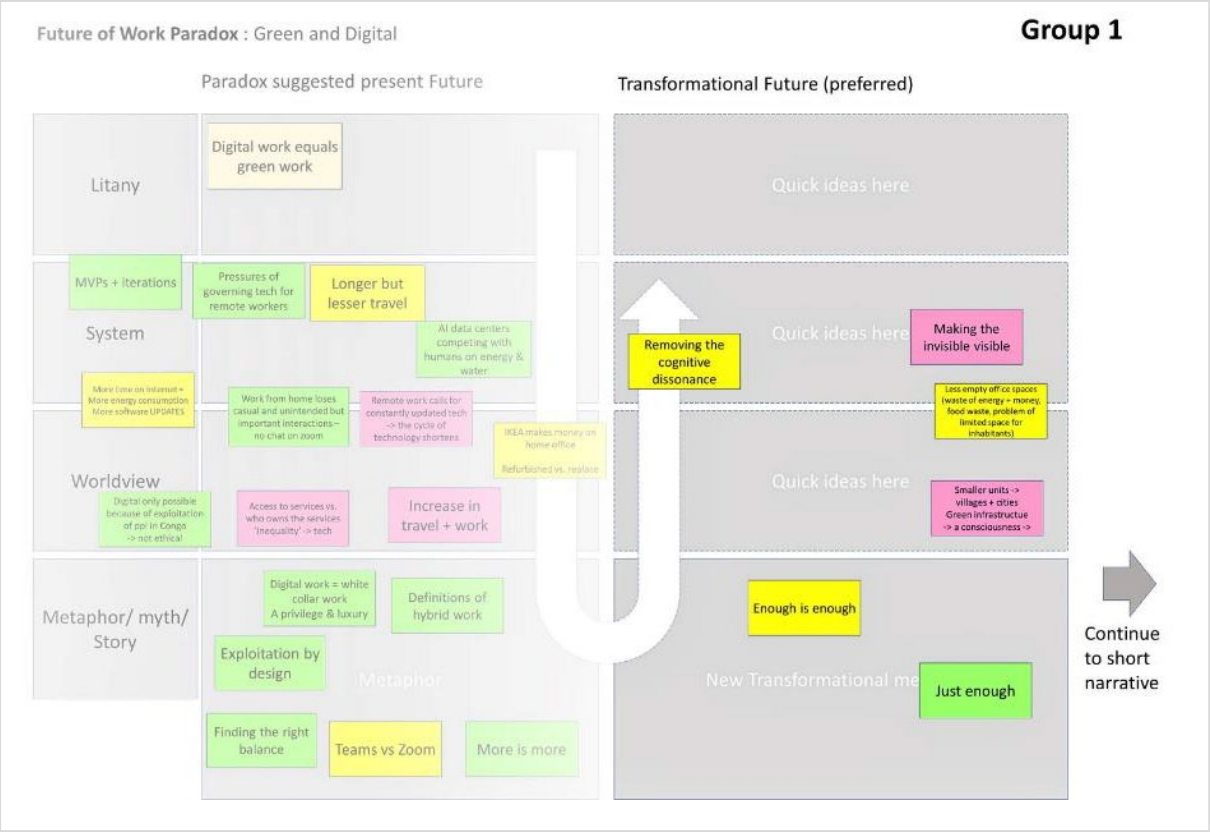


Figure 7. *Results of elaborations of Group 1 – Transformational future (Preferred).*

The transformed metaphor would be a society based on the principle that 'enough is enough', and where digital technologies help deliver 'just enough'. Just give us the best answer Google, that's enough. Another key discussion in the transformed future that relates again to the inequalities of the present system and the present narratives on digital work. In removing the cognitive dissonances – most people, when confronted with the topic, are aware of the inequality, but we just choose not to think about it. Another post-it similarly mentions making the invisible visible as a driver of the transformation.

This perception in the group, that the imbalance between the privileged and the non-privileged is one of the most important aspects of the Green and Digital paradox also showed up in the group's narrative (see next chapter). The chosen narrative was the child working in the Congo mines asking solemnly about remote, digital work: Why can I not join the party?

Phase 3 – Creating the New Narrative for Future Work

The group noted that in envisioning the preferred future, they realised there would be individuals who would never participate in digital work. As one participant framed it, there is someone "who is never going to do digital work" - someone who has likely longed to work from home their entire life yet will never be "invited" to this "green digital future" that others seem to enjoy.

The group acknowledged the risk of this future narrative justifying "elitist lifestyles," leaving behind those who are unable to access or benefit from the digital transformation. To counter this, the group adopted the perspective of the "non-digital worker" - a voice that is often conspicuously absent from the visions of a transition.

In the spirit of more holistically considering the future, the group recognised the real possibility of a positive path forward. This could involve social activism and movements focused on the rights and conditions of non-digital laborers, such as the notable example of the children mining cobalt in the Congo to enable the digital economy.

The participants emphasised that the digital future cannot be achieved in isolation – it is inextricably linked to the experiences and well-being of all workers, both digital and non-digital.

Feedback and Recommendations

Jerome Glenn offered a side comment on the group's preferred future narrative. He suggested a potential shift in the metaphor, moving away from "more is more" towards "smart is more." This subtle change in framing implies a transition from a focus on quantity towards a greater emphasis on quality, efficiency, and values.

Additionally, Glenn expressed scepticism about the continued prevalence of human labour in mining operations by 2035. He anticipated that the vast majority of mining activities will be automated and performed by machines, which are expected to outperform humans in this domain. While acknowledging the group's important point about the need to consider the experiences of non-digital workers, Glenn reiterated the idea of prioritising "smart is more" over the simple accumulation of "more."

Figure 8. *Participants working together and presenting their results (Group 1). (Photo: Samaneh Ebrahimabadi)*

Group 2: Work/Life Balance

This group was moderated by Paula Pättikangas, UN Youth Delegate of Finland, and research assistant at Finland Futures Research Centre (FFRC), University of Turku. The participants of this group are listed in Appendix 4.

Phase 1 – Deconstructing Paradoxes of Work through CLA

Phase one started with the moderator instructions for small group working, describing the paradox given to this group – Work/life Balance:

Work takes on qualities of leisure and hobbies, while leisure adopts characteristics of work.
How you associate place with work or leisure, affects your wellbeing?

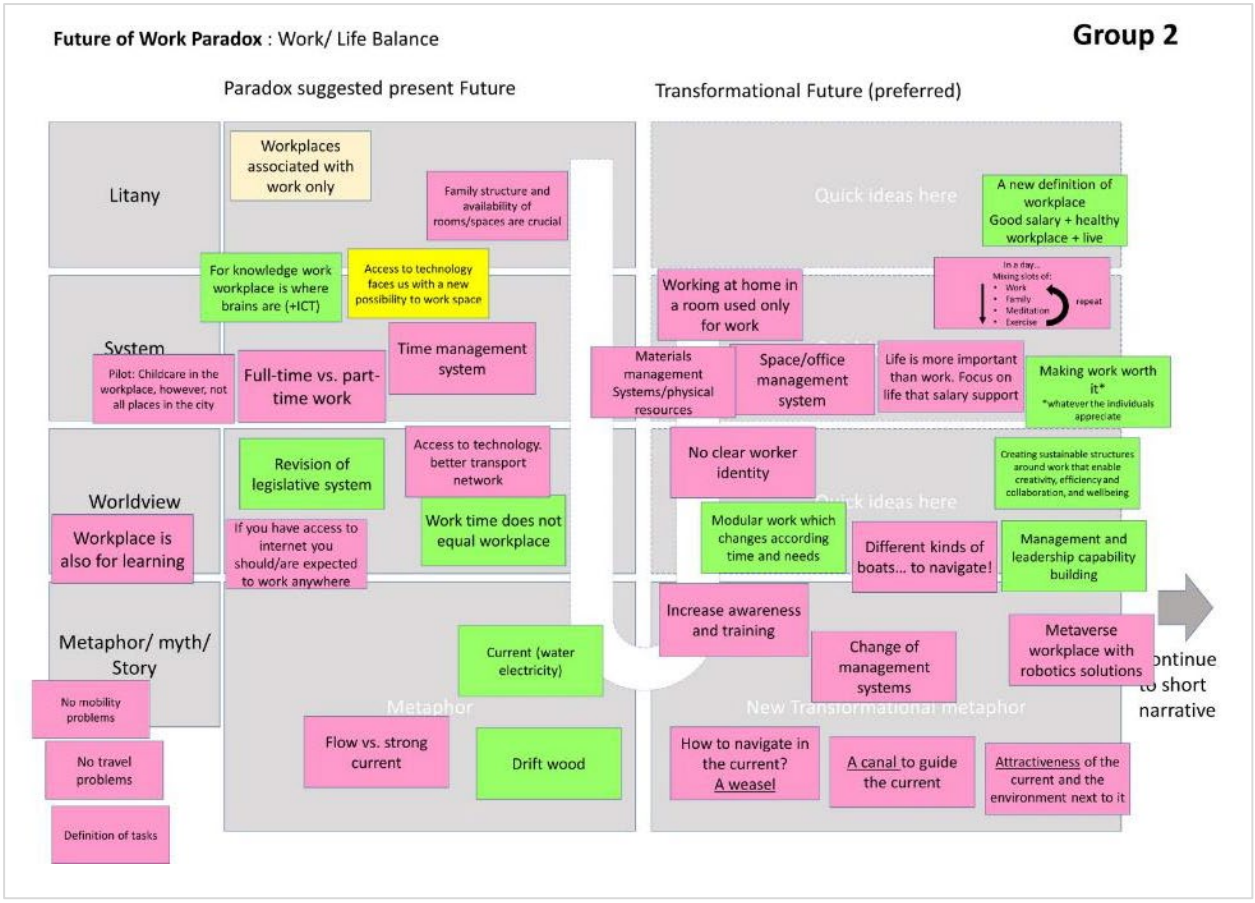


***Figure 9**. Results of elaborations of Group 2.*

At the litany level, the group started with this example: "Workplaces associated with work only." Additionally, it was suggested that another litany be added, "Family structure and the availability of rooms/spaces are of utmost importance."

At the **system** level, participants discussed several key points. They highlighted the shift in perspectives around the workplace, noting that "For knowledge work, the workplace is where brains are (+ICT)." This suggests a recognition that the physical location of work is evolving, with technology enabling more flexibility.

The group also raised the issue of "access to technology" and how it "faces us with a new possibility to workspace." One participant explained: "For example, I live in the countryside, so it's like 40 minutes without traffic, and with traffic, maybe it can be one hour and a half to go to work. But because I have my small modem, and as far as I'm not driving, I immediately start working from my laptop, and I'm not losing this time." This demonstrates how technology can enable remote work and reduce the time and resource constraints associated with traditional commuting.

Additionally, the participants discussed the need to consider "Pilot: Childcare in the workplace, however, not all places in the city," which means that the way of looking at the workplace is changing. “In my country many government departments try to provide assistance, to help in individual or social life. For example, it is possible for women to bring their children to babysit at work. But not in all cities or in all companies. There are several pilot projects.” Issues were also covered like the balance between "full-time vs. part-time work" and the importance of "time management systems."

One key worldview shift identified is the notion that the "Workplace is also for learning". As they discussed, there is an emerging trend of prioritising employee well-being and personal development in the workplace, not just focusing on productivity. The workplace is seen as a space for learning and investing in executive education, which in turn motivates staff to perform at their best. This could represent a departure from the traditional view of the workplace as a purely functional space dedicated solely to work.

Additionally, the participants suggested the need for a "revision of [the] legislative system" to better accommodate the changing dynamics of work, as well as "access to technology" and a "better transport network" to enable more flexibility and remote work options. This could suggest a broader worldview shift in how we conceptualise the relationship between work, technology, and the physical space of the workplace.

Furthermore, the group observed that "If you have access to the internet you should/are expected to work anywhere", and that "Work time does not equal workplace". These perspectives challenge the traditional views of time and space in the context of work, suggesting a **more fluid and decentralised understanding of the workplace.**

At the **myth/metaphor** level, one participant suggested the metaphor of "No mobility problems," which could symbolise a vision of seamless movement and integration between work and life, free from the constraints and frictions that have traditionally separated the two domains. Similarly, the idea of "No travel problems" connects to a deeper desire to eliminate the boundaries and barriers that have historically divided work and personal time.

The next issue explored was the metaphor of "Definition of tasks," which offers up a reframing of work and productivity away from rigid, predetermined structures and toward more fluid, adaptive modes of organizing and accomplishing tasks. Other metaphors that emerged include "Flow vs. strong current", "Current (water electricity)", which links to the interchange between the physical and digital aspects of modern-day work, and the "Driftwood" metaphor which symbolises our ability to cope with the strong current.

Phase 2 – Transforming the Metaphor

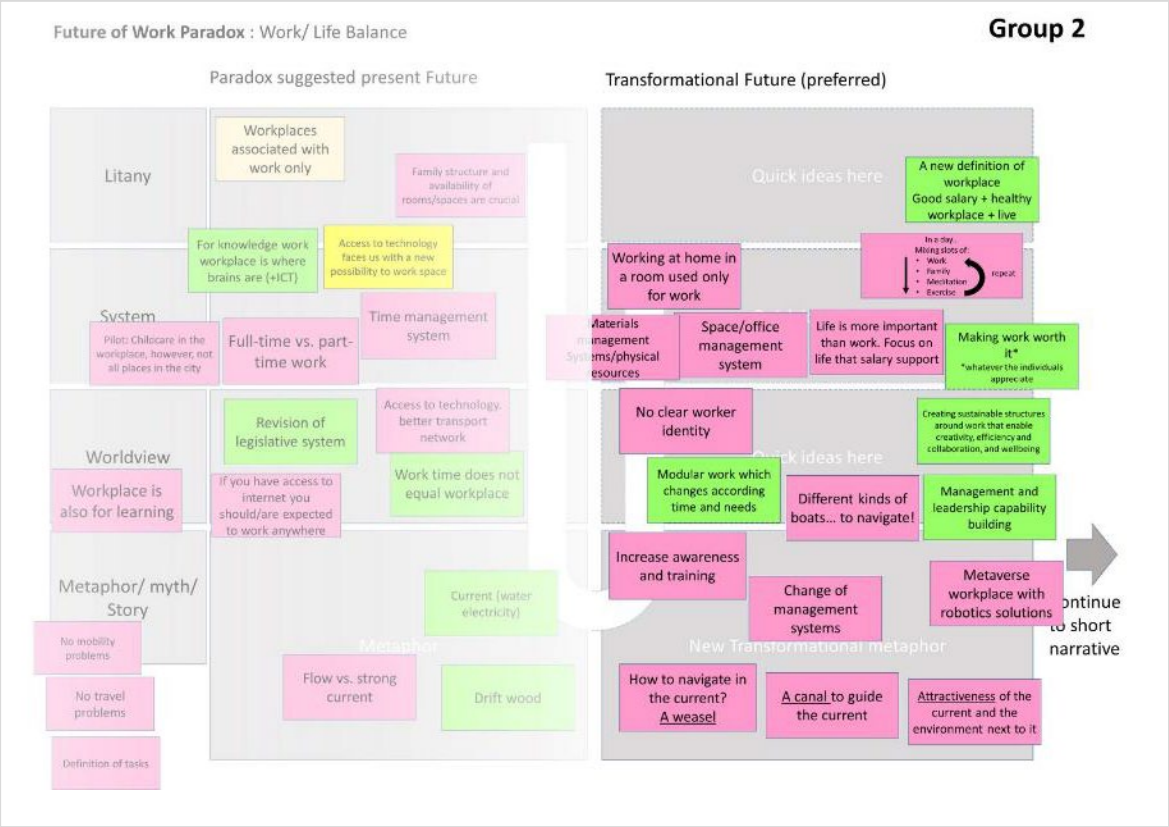


Figure 10. *Results of elaborations of Group 2 – Transformational future (Preferred).*

Considering the preferred future, Group 2 moved from the "current" metaphor to the more proactive **"A canal to guide the current"** metaphor. This shift can mean a transition from passively coping with the challenging work-life balance "current" to actively designing the structures and environments that can channel and direct that energy in a more productive and sustainable way.

The "canal to guide the current" metaphor suggests the need to create the necessary infrastructure and systems to organise and regulate the flow of work and life demands. As one participant explained, this is about controlling the environment and not creating the conditions that drown the workers. The idea is to design the "canal" or "channel" that enables workers to perform at their best, adjusting to different times and situations.

Complementing this metaphor, participants also explored the idea of "A weasel" as a way to "navigate in the current." This evokes a more adaptable approach to work-life balance, where individuals are empowered to skilfully manoeuvre through the challenges and seize the positive aspects of the "current." Other preferred future metaphors and ideas that emerged include "Increase awareness and training," which points to the need for greater individual and organisational understanding of work-life balance challenges; "Change of management systems," signalling the requirement for more flexible, human-centric approaches to work; "Metaverse workplace with robotics solutions," hinting at technological innovations that could redefine the boundaries between work and life; and "Attractiveness of the current and the environment next to it," suggesting the possibility of designing work-life environments that are genuinely appealing and engaging.

On the level of **worldview,** one key aspect that the group focused on is "Management and leadership capability building," which suggests a recognition that effective work-life balance requires a significant investment in developing more nuanced, empathetic, and enabling approaches to organisational

leadership and management. Closely related to this is the metaphor of "Different kinds of boats... to navigate!" This gives the idea of a more diverse and adaptive approach to work, where individuals and teams have access to a range of "boats" or work modes that can be selected and customised based on the specific needs and demands of the situation. The "modular work which changes according [to] time and needs" further reinforces this idea, where the work environment itself becomes a malleable and reconfigurable space that can seamlessly transition between work, well-being, and personal needs. The fundamental position of this worldview is a desire to "Creating sustainable structures around work that enable creativity, efficiency and collaboration, and wellbeing."

Interestingly, the notion of "No clear worker identity" suggests a move away from the rigid, siloed conceptions of work and personal life, toward a **more fluid and adaptive sense of identity** that can fluidly navigate between different roles and responsibilities.

On the **systems** layer, "Working at home in a room used only for work" suggests the need for clear spatial and environmental boundaries between work and personal life, even in remote or hybrid work arrangements. This point is further reinforced by the mention of the "space/office management system." Another systems-level thought is "materials management, systems/physical resources," which speaks to the need for optimising the tangible tools and infrastructure that enable efficient and effective work without compromising on personal well-being.

Deeper still, they expressed a worldview where "Life is more important than work. Focus on life that salary supports." This resonates with the notion of "Making work worth it", "whatever the individuals appreciate," suggesting that work systems should be designed to align with and support the personal values, interests, and needs of individual employees rather than imposing a one-size-fits-all approach.

Another innovative concept suggested was the idea of "In a day… repeat mixing slots of Work, Family, Meditation, Exercise" meaning the desire for systems that enable a rhythmic and balanced integration of work, self-care, and personal life rather than a fixed separation of these domains. Then the group agreed on **"A new definition of workplace: Good salary + healthy workplace + live"** for the litany level on preferred future.

Phase 3 – Creating the New Narrative for Future Work

After considering several interconnected metaphors, the group converged on the following preferred future narrative:

"AI monitors my biological parameters." Through this monitoring, the AI "pushes me to allocate my time to different activities of life, including work." Importantly, the "salary is linked automatically to the use of time for work." Additionally, "the possibility is that the employer also has access to this data," allowing them to optimise worker allocation based on individual productivity patterns.

This narrative envisions a future where AI plays a central role in managing the work-life balance of individuals. The AI is able to provide real-time guidance on how to distribute one's time most effectively across professional and personal domains by tracking biological metrics. The direct link between work time and compensation introduces a level of automation and oversight.

Feedback and Recommendations

After the group presented their preferred future narrative, Jerome Glenn expressed his positive view of the core concept. He highlighted the transition "from fitting into the canal, which is what we have today," referring to the current education and employment systems that emphasise conformity. Glenn noted that "the job teaches you how to fit in, but what we are fitting into may no longer be there the same way." He saw the group's narrative as a meaningful shift away from this outdated model towards one where individuals **"learn how to self-initiate" with the assistance of AI.**

Glenn argues this approach is "pretty smart," as it equips people to adapt to a rapidly changing landscape rather than simply trying to conform to a static set of expectations.

Figure 11. *Participants working together and presenting their results (Group 2). (Photo: Samaneh Ebrahimabadi)*

Group 3: Back to Basics

This group was moderated by Riku Viitamäki, project researcher at Finland Futures Research Centre (FFRC), University of Turku. The participants of this group are listed in Appendix 4.

Phase 1 – Deconstructing paradoxes of work through CLA

Phase one started with the moderator instructions for small group working, describing the paradox given to this group – Back to Basics:

The more we spend time in the digital world, the more we appreciate physical contact and analogue solutions. Digital life harbours danger for mental health, if they are totally bound by digital, they need a possibility for escape.

These basics are related to places (slow, simple, silent, as long as the basic needs are provided (safety, shelter, food), true satisfaction is from interaction with family and friends, not from material goods.

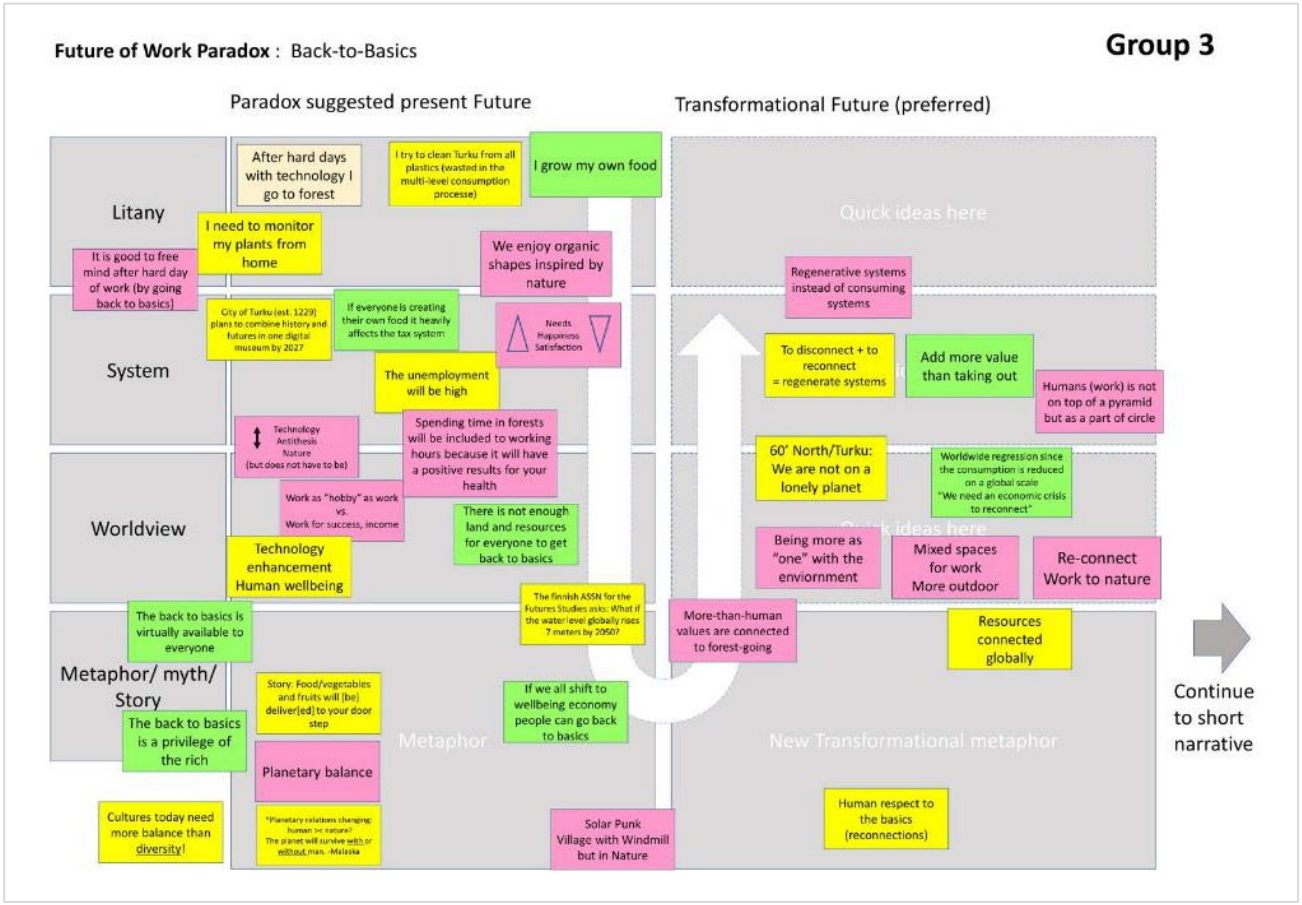


Figure 12. *Results of elaborations of Group 3.*

As the litany, Group 3 started with this example: **"After hard days work with technology, I go to forest".** Then they continued to conceptualise the paradox through nature. They attempted to reconnect with the natural world and escape the complexities of modern life. The group described taking actions such as "going to the forest," "growing my own food," and "enjoy[ing] organic shapes inspired by nature." One of them saw a future where people actively seek to minimise their impact on the environment by "clean[ing] Turku from all plastics" and relying more on self-sustenance through home-grown food. Additionally, the

desire to "monitor my plants from home" which could be a blending of technological tools with natural processes, indicating a balanced approach rather than a complete rejection of technology.

Furthermore, Group 3 emphasised the importance of "free[ing] mind after hard day of work (by going back to basics)." This suggests a future where individuals place a higher value on mental well-being and a harmonious relationship with nature, in contrast to the current work-centric and technology-driven lifestyles.

On the level of **systems**, the group found that the potential impact of widespread home-grown food production on the tax system, noting that "if everyone is creating their own food, it heavily affects the tax system." This suggests an awareness of the systemic implications of a shift towards self-sufficiency and a move away from traditional food production and distribution channels. Additionally, the participants foresaw the possibility of "high unemployment" as a consequence of the changes they envision. This indicates an understanding of the potential disruptions to existing economic structures and the need to address the social and economic impacts of such transformations.

Interestingly, also proposed was a novel approach to work-life balance, where "spending time in forests will be included to working hours because it will have a positive result for your health." This suggests a shift in the perception of productivity and the recognition of the importance of mental and physical well-being in the workplace. Furthermore, they stated that “in the pyramid of need, when we go towards the top, happiness and satisfaction are inverted and we see a decrease in how we enjoy the things we can do” points to a deeper understanding of the relationship between material prosperity and subjective well-being.

Regarding the worldview, the participants recognised the inherent value of integrating time in nature into the work paradigm, as evidenced by their statement that "spending time in forests will be included in working hours because it will have a positive result for your health." However, they also acknowledged the practical constraints, noting that "there is not enough land and resources for everyone to get back to basics."

Interestingly, the participants expressed a nuanced perspective on the role of technology, stating that "technology enhanced human well-being" and as well "there is a felt antithesis between technology and nature, but it does not really have to be like that" further reinforces this viewpoint. They recognised the potential for reconciling the perceived dichotomy between technology and nature, suggesting a more integrated and balanced approach. Furthermore, the participants’ perspective on "work as 'hobby' as work vs. work for success, income" reflected a shift in the underlying values and assumptions about the purpose of work.

Of **myths and metaphors**, the group found that **"Food/vegetables and fruits will [be] deliver[ed] to your doorstep"** can be seen as a metaphor for the perceived convenience and accessibility of a "back to basics" lifestyle. However, they also acknowledged that this may just be "a luxury" and "a privilege of the rich," suggesting a deeper recognition of the potential for this vision to become a privilege of the elite, rather than a widespread reality. They also grappled with the paradox of "The back to basics is virtually available to everyone" versus "The back to basics is a privilege of the rich." This tension reflects the underlying struggle between the ideals of universal access to a simpler, more natural way of living and the practical realities of resource constraints and socioeconomic disparities. However, "If we all shift to a wellbeing economy people can go back to basics" suggests a belief in the transformative power of economic and social systems that prioritise individual and collective well-being over pure material accumulation.

The invocation of "Solar Punk Village with Windmill but in Nature" as a metaphor is particularly evocative. It combines the imagery of renewable energy technology with the natural setting, symbolising a vision of a future where technology and nature coexist in a harmonious relationship. The participants' statement that "Cultures today need more balance than diversity!" points to a longing for a sense of harmony and equilibrium within the societal fabric. This resonates with the broader metaphor of "Planetary balance."

Furthermore, the participants acknowledged that "Basics in the past was a need and in the future is a choice," reflecting a shift in the cultural and psychological relationship to the natural world. This recognition suggests a deeper understanding of the evolving role of the "back to basics" lifestyle, from a necessity to a conscious choice.

Additionally, "If we all shift to a wellbeing economy, people can go back to basics" suggests a belief in the transformative power of economic and social systems that prioritize individual and collective well-being over pure material accumulation.

Phase 2 – Transforming the Metaphor

In this phase Group 3 started to transform the metaphor, in the metaphor level as part of their preferred future.

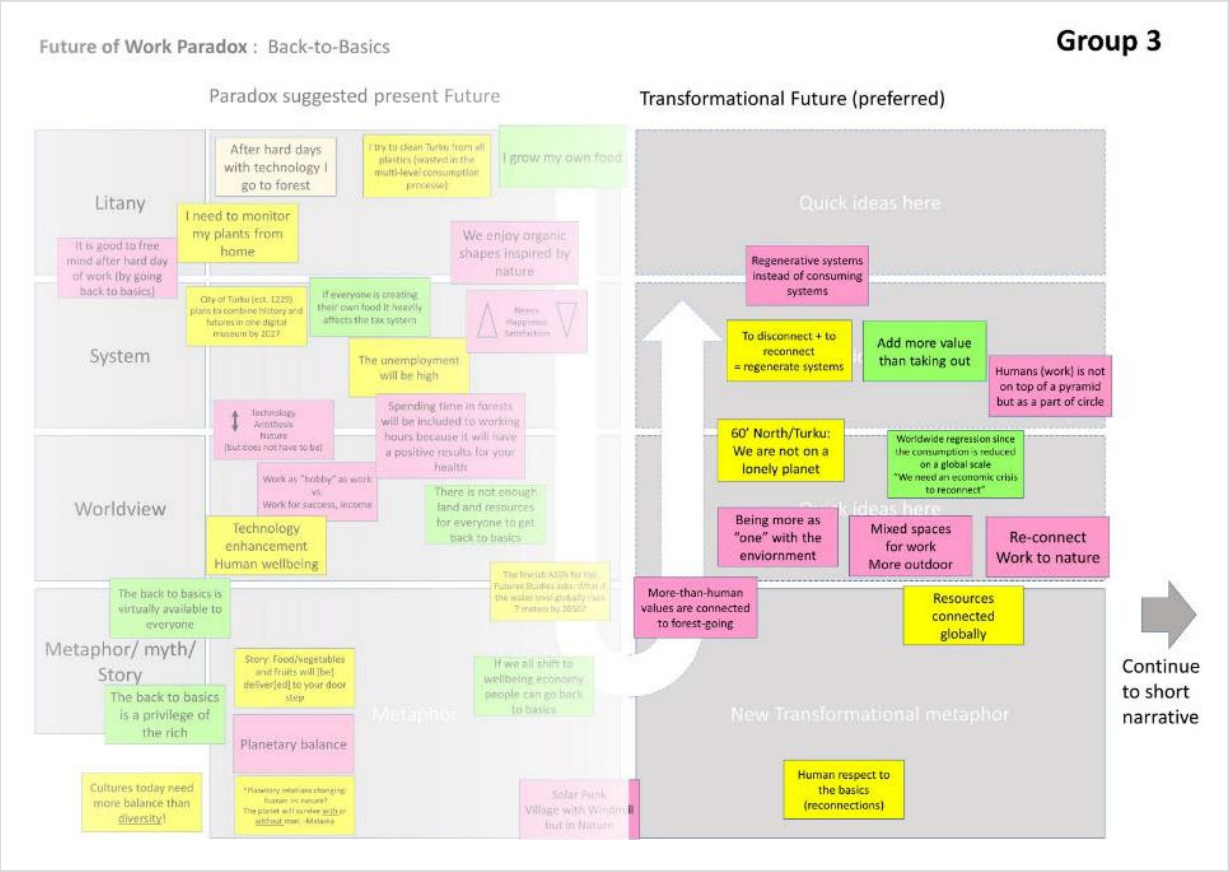


Figure 13. *Results of elaborations of Group 3 – Transformational future (Preferred).*

They began the discussion by exploring the idea of a type of religion that focuses on nature. One participant suggested that a belief system where there are spirits in the forest and sea could lead to greater respect for nature. The group then made a connection to Finnish vernacular traditions and religions, noting the concept of "Mother Earth" and a potential transition in religious thinking. The participants agreed that there should be more respect for the basics, rather than just for other human beings, especially given the prevalence of crime and lack of mutual respect.

Then a preferred future metaphor **"Human respect the basics"** was chosen as the primary metaphor. This was seen as encompassing the ideas the group had discussed, with a focus on a "reconnection" to the fundamentals of life and nature.

At the **worldview** level, the group discussed several key ideas. The discussion began by exploring the idea of having "mixed environments where to work" and "more outdoor working," which they summarised as "mixed spaces for work, more outdoor." One participant proposed "reconnect work to nature" as a way to capture the group's vision. Reduction in global consumption may lead to an economic crisis, which could then facilitate a reconnection to the earth, expressing the belief that "we need an economic crisis to reconnect." The group emphasised the importance of "being more as one with environment, other beings," appreciating and connecting with the broader environment and other living beings in a holistic manner. They discussed the idea of "resources connected globally," both human and natural, being connected on a global scale. The idea of "more-than-human values are connected to forest-going," indicating that values that go beyond just human-centric concerns should be connected to activities like spending time in the forest. Additionally, another idea that further recognises the interconnectedness of the world was "We are not on a lonely planet,".

Moving to the **system** level, several concepts were proposed. One participant suggested that "humans' work is not at the top of the pyramid, but as a part of a circle," indicating a more holistic, interconnected view of human activity within broader natural systems. The simple but powerful idea of "add more value than taking out," was also expressed. This points out the need for more regenerative, less consumptive approaches. This theme of regeneration was further developed, described in note, which stated "to disconnect + to reconnect = regenerate systems". This shows the importance of balancing the disconnection from current unsustainable practices with a reconnection to natural cycles and processes. Ultimately, they advocated for "regenerative systems instead of consuming systems". This means a systemic shift away from extractive models towards more sustainable, circular approaches.

Phase 3 – Creating the new narrative for future work

Group 3's preferred future narrative centered around the image of a **"Child in the forest"** that has a lot of future ahead. They envisioned a scenario where the child would adjust to living in harmony with the wild animals and plants of the forest. As the child grows into adulthood, they would continue to work in the forest, serving as a nature educator, respecting, tending to, and stewarding the natural environment. The group suggested that instead of paying taxes, one could choose to move to the forest and take on the responsibility for caring for it, that indicates a shifting away from traditional economic systems towards a more direct connection with and custodianship of the land. This narrative describes a future where human life is deeply integrated with, rather than separate from, the natural world, focused on nurturing and regenerating natural systems. A child that holding the earth to care for in preferred future is depicted in Figure 14.

Figure 14. *A child holding the earth to care for – the only toy will be the planet.*

Feedback and Recommendations

After Group 3 presented their results, Jerome Glenn raised a critical question about the feasibility of their preferred future narrative. He asked, "What's the population of the planet in 2035? One child. Well, if it's given or takes a bit of nine billion people, how could nine billion people have the choice to live in the forest? It's just not practical."

In response, the group members explained that their vision was not necessarily about physically living in the forest but rather about adopting a "mental state" of respect and connection to nature. As one group member stated, "You can think of it as a mental state. Also, in cities where you grow near nature, not only in forests. And so, it's mental state." They argued that their discussion had explored ways to foster greater respect for nature in all areas where people live, not just in forest settings.

Figure 15. *Participants working together and presenting their results (Group 3). (Photo: Sirkka Heinonen)*

Group 4: Control

Group 4 was moderated by Lassi Tähtinen, doctoral researcher at Aalto University. The participants of this group are listed in Appendix 4.

Phase 1 – Deconstructing Paradoxes of Work through CLA

Phase one started with the moderator instructions for small group working, describing the paradox given to this group – Control:

The work becomes more creative and autonomous, while also workers are increasingly being surveilled through digital means for control and efficiency. This is due to lack of trust and leaders' self-legitimacy. Leaders' insecurity leads to stricter control though digital means in lieu of trust. Surveillance for efficiency takes place at the expense of creativity.

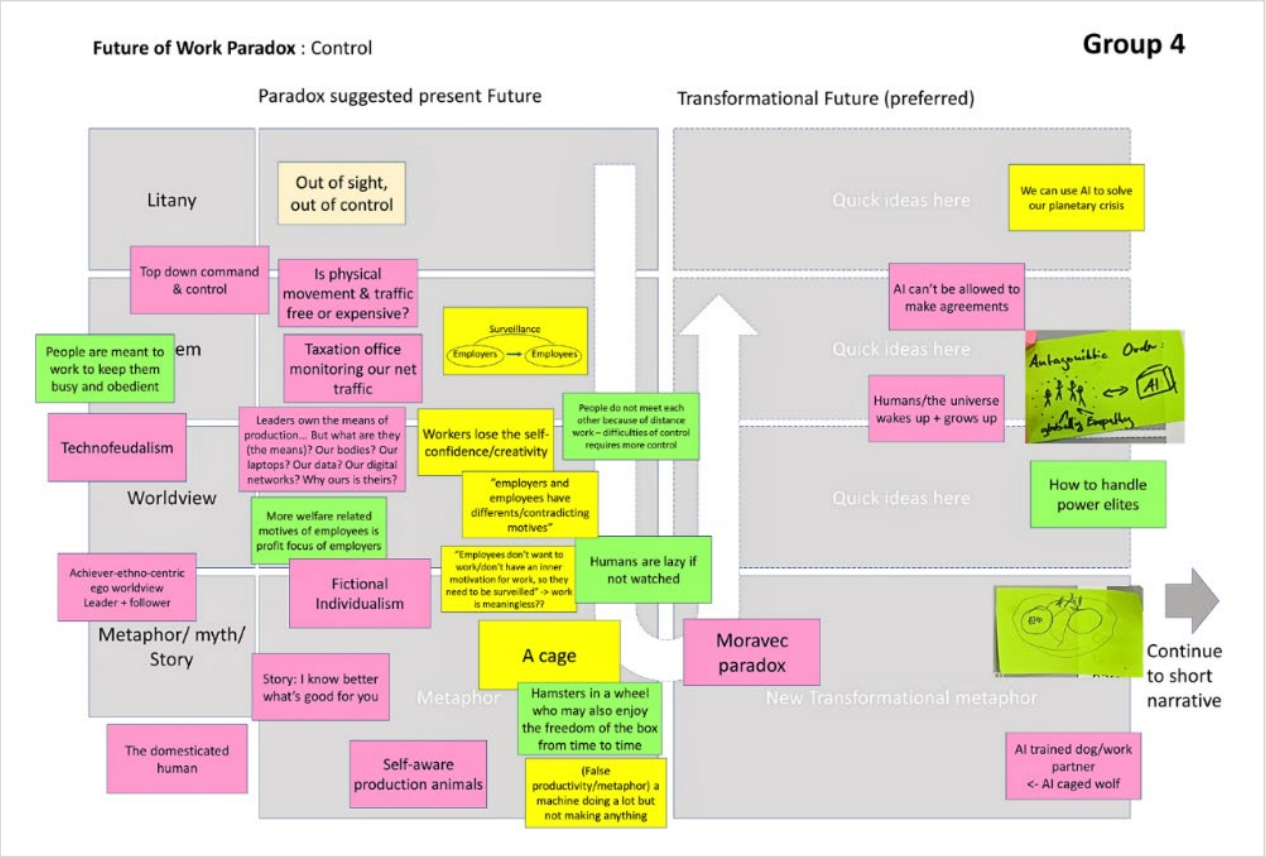


Figure 16. *Results of elaborations of Group 4.*

"Out of sight, out of control" was the given example that the group agreed to use as the starting point for their litany. At the **systems** level, the participants suggested **"Top-down command & control"** as a prevailing system where decision-making and authority are heavily concentrated at the upper echelons, with little room for bottom-up input or decentralised autonomy. This hierarchical and authoritarian approach was discussed with the perspective that "People are meant to work to keep them busy and obedient," and "Humans are lazy if not watched." Continuing this, the participants raised questions about the physical and digital infrastructure that would enable and maintain this control, asking "Is physical movement & traffic free or expensive?" and suggesting a "taxation office monitoring our net traffic."

This theme of surveillance and monitoring is further identified in this formula, "Employers → Surveillance → Employees." Expressing the growing power imbalance between organisations and individuals, where advanced technological and managerial tools are used to exert increasing influence and oversight over the other.

On the **worldview** level, the group start wondering "Leaders own the means of production… But what are they (the means)? Our bodies? Our laptops? Our data? Our digital networks? Why ours is theirs?". This is further reflected upon in the observation that "Workers lose their self-confidence/creativity," that suggests a worldview where the current systems of control actively undermines the autonomy, agency, and core motivation of the workforce in the pursuit of organisational objectives.

Also discussed was concern about the erosion of human connection and the corresponding intensification of surveillance and monitoring as a means of maintaining control: "People do not meet each other because of distance work – difficulties of control require more control". These concerns show the core misalignment between the "employers and employees [who] have different/contradicting motives," as well as the resulting possibility where "Employees don't want to work/don't have an inner motivation for work, so they need to be surveilled → work is meaningless?".

Furthermore, the concept of "Technofeudalism," where technology and data become the new "means of production" controlled by a powerful elite, represents a particularly disturbing manifestation of this worldview.

At the **myth/metaphor** level, the participants discussed "Achiever-ethno-centric ego worldview, Leader + follower" as a dominant cultural narrative that worships a hierarchical, individualistic, and competitive model of success. This further connects with the concept of "Fictional Individualism," which draws attention to the divide between the idealised myth of the autonomous, self-determined individual and the reality of increasingly constrained and monitored lives.

The presented metaphor of "The domesticated human" and "Self-aware production animals" gives the idea of the human condition, in which individuals have been trained like a dog and animals are acutely aware of their precarity. The notion of "(False productivity/metaphor) a machine doing a lot but not making anything", suggesting that the current systems of control may actually be undermining genuine creative and generative work, representing a challenge to efficiency and productivity. The image of "Hamsters in a wheel who may also enjoy the freedom of the box from time to time" captures the paradoxical experience of individuals who alternate between the confines of the "wheel" (the system of control) and the fleeting moments of "freedom" (the box).

Finally for this stage, the metaphor of "A cage" effectively captures the idea of being confined, restricted, and losing personal control

Phase 2 – Transforming the metaphor

In phase two, the group moved from the "Cage" metaphor toward a more collaborative vision for the future. They highlighted the need to overcome the separation and distance between people, particularly employers and employees. The key metaphor that emerged was **"Togetherness"** – a future with a common purpose and shared understanding rather than a hierarchy of ‘domesticated workers’ and overcontrolling employers.

Group 4 envisioned a "free human" who is not confined or herded but who "chooses to stay together" with others. This contrasts with the current metaphor of the "domesticated human" and the "cage" that constrains people. They suggested a novel solution of an "AI trained dog/work partner ← AI caged wolf," meaning that the AI and especially AGI should be the one "in the cage," while the humans, both employers and employees, are on the outside of the cage; rather than rivals, they become "work partners." Additionally, the participants brought up the "Moravec paradox".

Moravec's paradox (Moravec, 1988) is the observation in artificial intelligence and robotics that, contrary to traditional assumptions, reasoning requires very little computation, whereas sensorimotor and perception skills require enormous computational resources. Meaning that the challenge for AI is its connection to the real world.

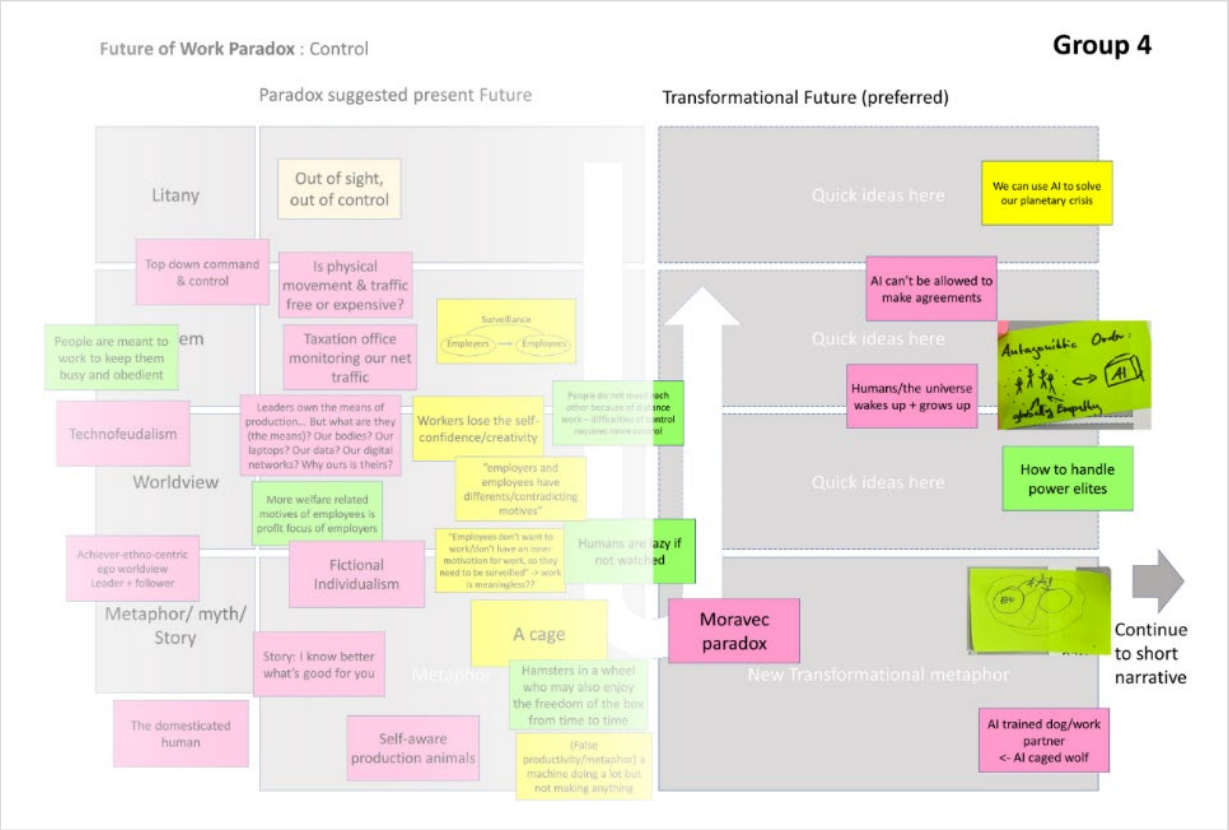


Figure 17. *Results of elaborations of Group 4 – Transformational future (Preferred).*

At the worldview level, the group showed concern about the concentration of power and "How to handle power elites." Expressing a more holistic and integrated understanding of humanity's relationship with technology and the natural world, while also showing a different “antagonistic order” at the system level was found in the suggested metaphor: "Humans/the universe wakes up + grows up" If the employer and the employee are no longer the antagonists, then empathy is different. Empathy therefore is directed towards humanity in general. This worldview sees the rise of advanced AI and automation not as a threat but as an opportunity for a collective awakening and maturation, where “Empathy,” trust, and a sense of shared consciousness become central.

At the system level, AI only becomes the antagonist, if it is not properly controlled and therefore "AI can’t be allowed to make agreements." Finally, the group suggested **"We can use AI to solve our planetary crisis"** as the litany for the preferred future. For example, AI could be used to create Earth 2.0 models.

Phase 3 – Creating the New Narrative for Future Work

Arriving at the narrative of a preferred future, the group began with a situation where employers were controlling employees by using AI systems. To address this challenge, they proposed putting the AI "in a cage" and creating a better understanding between employers and employees. As one member explained, we needed to put the AI in the cage, and then the employer and employee found out they have the same kind of motives, so they do not have to surveil each other anymore. The focus has then shifted to "building trust" between people rather than relying on surveillance and control relationships.

The group then explored ways to responsibly manage AI technology, aiming to take it out of the cage, but it still has to be guided like a dog. We need to control it. This involved "reclaiming human creativity and innovation" using AI as a collaborative partner rather than a tool of dominance.

In the group's preferred future, **"we are all employers after that, and the AI is the worker."** However, they recognised the need for ongoing monitoring and guidance, noting that the glasses here mean that we need to check a bit after the AI, we cannot leave it alone, and we need to "learn how to employ the beneficial side of the AI." Figure 18 illustrates the preferred future.

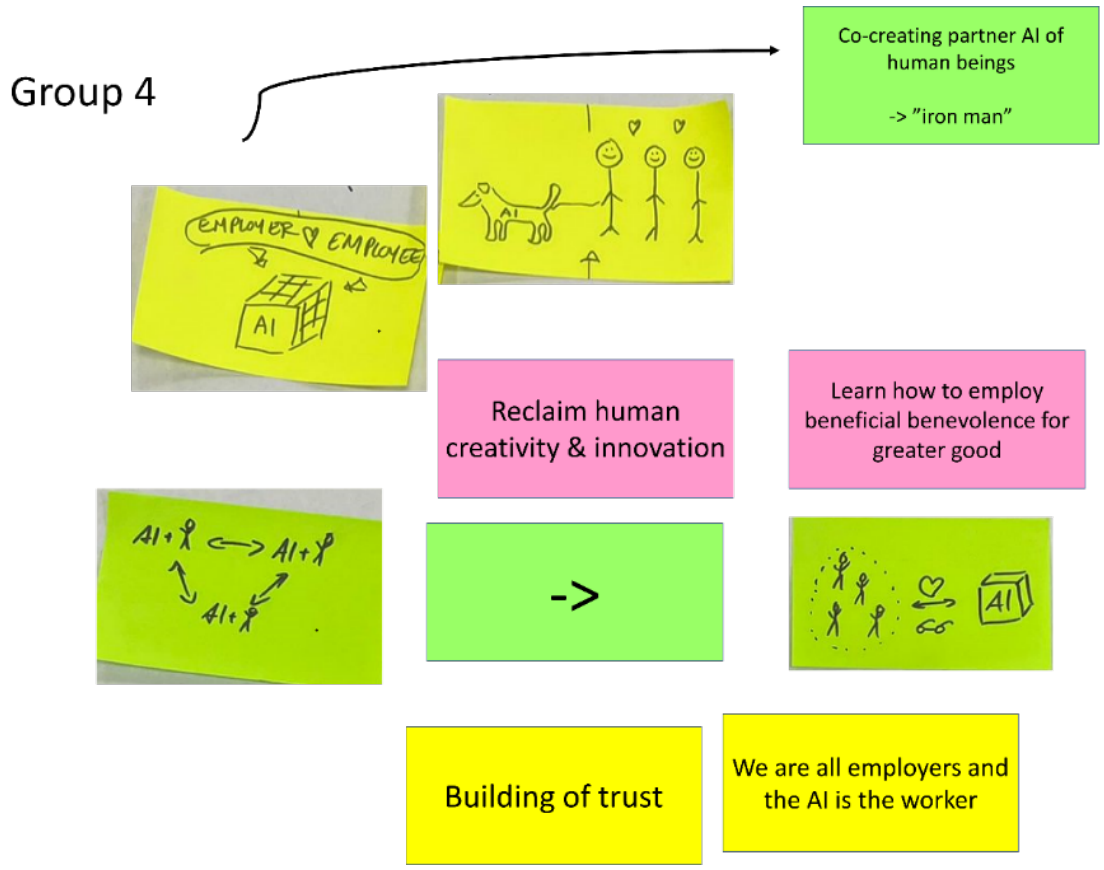


Figure 18. *Illustration of preferred future on paradox of Contol.*

Feedback and Recommendations

Jerome Glenn expressed his strong support for the responsible management of AI, but noted the significant challenges involved. He acknowledged the global scale of the issue, stating "we got a whole globe so in this story, but this story would have to be replicated across a lot of people and a lot of cultures and a lot of different interests."

Regarding the group's proposal to "cage" the AI, Glenn expressed scepticism, stating that "the idea of caging AI on a global basis is a low probability." Instead, he underlined the need for urgent action, advising the group that "in this one you've got to figure out how you act very fast today."

***Figure 19**. Participants working together and presenting their results (Group 4). (Photo: Samaneh Ebrahimabadi)*

Group 5: Automation and AI

This group was moderated by Amos Taylor, project researcher at Finland Futures Research Centre (FFRC), University of Turku. The participants of this group are listed in Appendix 4.

Phase 1 – Deconstructing Paradoxes of Work through CLA

Phase one started with the moderator instructions for small group working, describing the paradox given to this group – Automation and AI:

Automation and AI both replace and intensify human work. Instead of flourishing for human capacity there can be a loss of attention span and mass unemployment. Previous replacement of heavy and unhealthy work is a positive outcome, but very soon automation and AI has taken away skilled creative work. Opposing trends: some lose their jobs, while others' abilities enhanced.

AI creates poetry and paints pictures while humans are left with menial jobs.

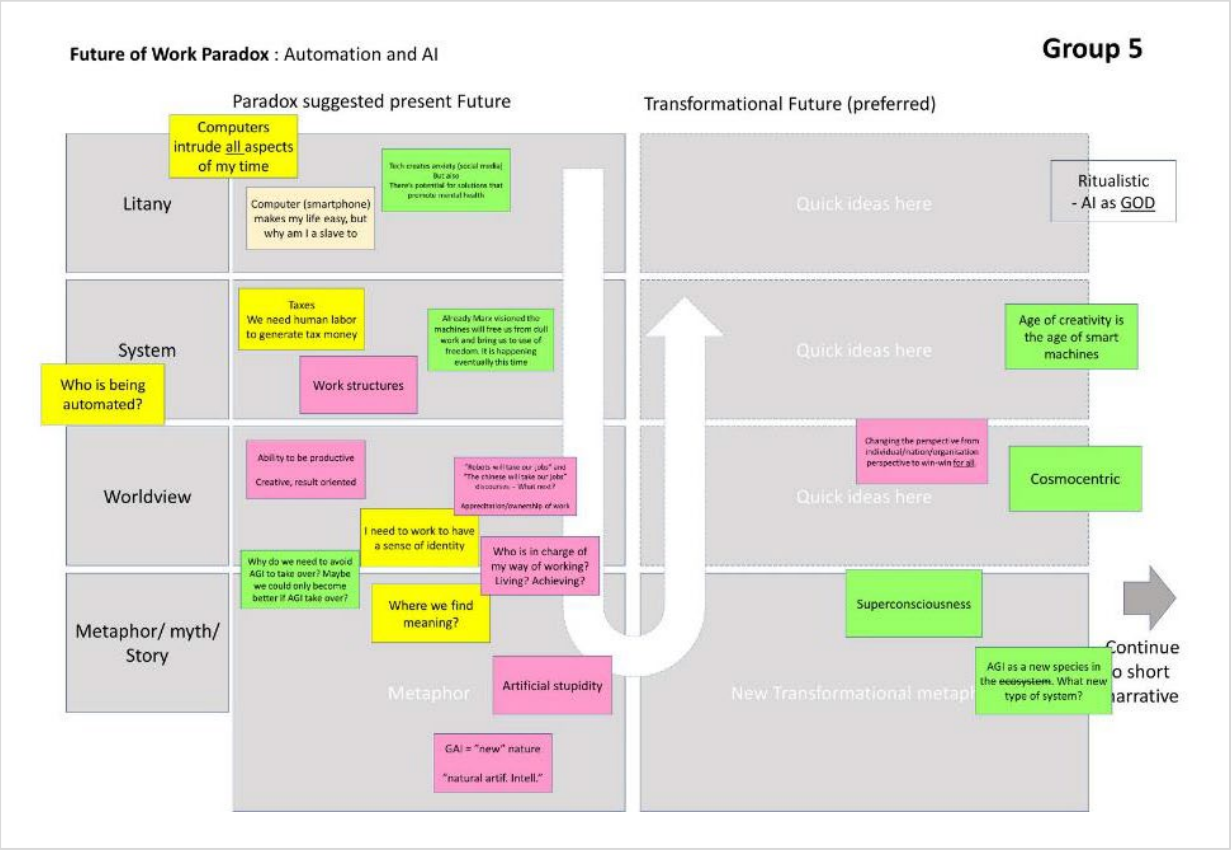


Figure 20. *Results of elaborations of Group 5.*

In phase 1, as the litany, the group started with this example: **"Computer (smartphone) makes my life easy, but why am I a slave to IT."** Then they added some more litany examples such as: "Computers intrude all aspects of my time" and "Tech creates anxiety (social media), additionally: "There's potential for solutions that promote mental health."

At the **system** level, the participants questioned: "Who is being automated?" and who is really in charge - is it the technology or the individual? They noted that the general perceptionis like the of feeling like being

a "slave" to technology, which suggests a worldview of blaming the technology rather than one that helps in taking responsibility. The group pondered whether there needs to be someone or something "in charge" or if it is more akin to the environment, where no one is truly in charge.

The discussion also touched on the topic of taxation and human labour, recognising that with "Taxes: We need human labour to generate tax money". We still have this assumption that “we need human labour to generate tax, to get everything going." meaning that human labour is necessary to create the tax revenue to sustain the system.

Ultimately, the group suggested that the fundamental systemic challenge lies in "Work structures" and restructuring of work and societal systems to truly harness the potential of automation and AI to benefit humanity, rather than feeling enslaved by the very technologies meant to liberate us. One participant mentioned that this ties into the long-standing vision, already articulated by Karl Marx, that automation and robotisation would free humans from dull work and allow for greater freedom and self-actualisation. However, it was acknowledged that this utopian vision has not yet been fully realised, due to the complexity and distractions of modern life that have prevented this transition.

Arriving at the **worldview** level, one of the themes that emerged was the perceived value of "being productive, creative, and result-oriented." The participants questioned how they should define these qualities and whether it is something they should actively strive for. This closely linked to another idea "I need to work to have a sense of identity", revealing a worldview where an individual’s occupation and contributions to the workforce are intimately linked to their personal worth and social standing. Other topics of threats were around "Robots will take our jobs" and "The Chinese will take our jobs," reflecting a worldview of scarcity and competition, where the threat of job displacement is a constant concern. Consequently, this raised the question "Who is in charge of my way of working? Living? Achieving?"

Interestingly, the discussion took a turn with the possibility that "AGI taking over is only good for us." Where there is potential for AI to have a key positive role. There is a sense of general doubt about human capabilities", implying a dissatisfaction with human stewardship of the world and its problems, with the belief that humans have "done such a big mess" and are "not very good at this. This openness to the idea of AGI taking charge is reflected in the group’s willingness to entertain the notion that "maybe it's time to let things go" and allow AGI to take over, as it may be able to "do things much better than we do." They suggested that AGI taking over could lead to positive outcomes, such as "solving the climate crisis globally".

Regarding the **Myth/Metaphor**, the discussion let to ask "Where do we find meaning?". This represents a fundamental human need to locate a sense of purpose and significance, particularly in the face of disruptive technological and environmental change. Then in response, the group suggested the striking metaphor of "Artificial stupidity", to subvert the common understanding that AI is of superior intelligence.

Finally, one participant suggested the notion of "GAI = 'new' nature, 'natural artif. Intell." Interpreted as Gaia (nature combined) Artificial Intelligence (rather than GAI Generative Artificial Intelligence). This intriguing metaphor blurs the boundary between the natural and the artificial where AI and automation are no longer seen as unnatural or alien, but rather as a normal integral part of a new, hybrid "nature."

Phase 2 – Transforming the Metaphor

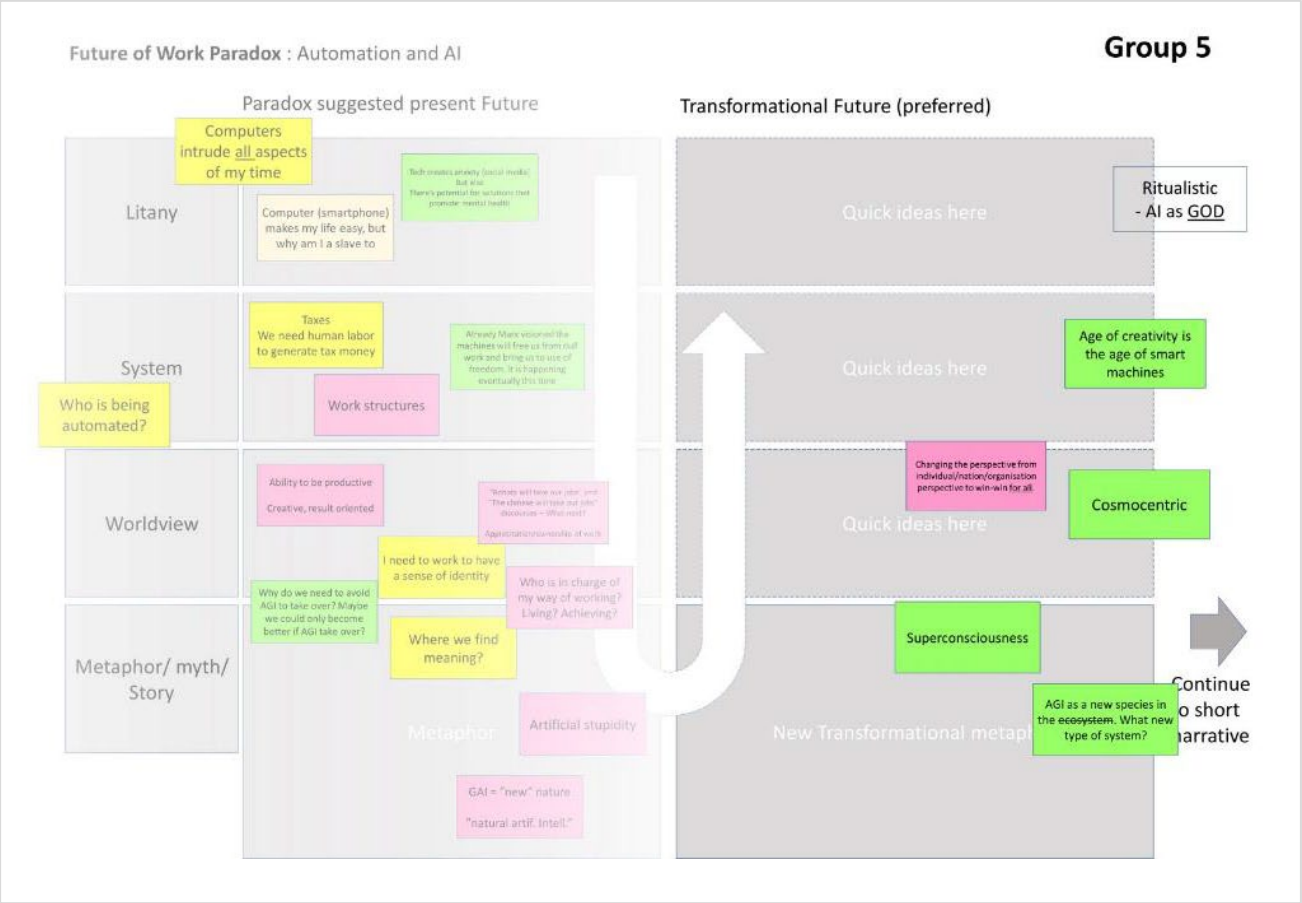


Figure 21. *Results of elaborations of Group 5 – Transformational future (Preferred).*

In the second phase, the group moved to transform the metaphor of "Artificial Stupidity" toward the "**Superconsciousness**" metaphor.

One participant noted that superconsciousness would be something that combines our forces with the AGI and creates a system we do not currently have. Regardless of the systems we have, such as DTOs, the United Nations, UNESCO, etc., they still run on a very national basis. That is why we cannot solve the problem in Gaza, and that is why we cannot solve it in the Ukrainian situation. Because it is still based on the national interest. Now with the capacity and potential to do that, we need to create a kind of infrastructure, which can be called superconsciousness, that would bring us to the other side.

The discussion continued to suggest the idea of "**AGI as a new species**", where there might be drawn artificial boundaries between different types of beings, which begs an existential question: but if AGI is a new species in the system, which is not an ecosystem, which is not an ecological being, then what kind of species is it?

Regarding the **worldview** level, the group members discussed the necessary ethical learning in AGI for "Changing the perspective from individual/nation/organisation perspective to win-win for all." We can just design something that is going to go from egoistic to "Cosmocentric" – where cosmocentric would be the widest realm compared to the ego.

For the **systems** level, the group suggested "age of creativity, the age of smart machines." This would aim ti combine human creativity in a real way with smart machines.

Finally moving back to the litany level, they agreed on a "Ritualistic" idea with "**AI as a God**". There is something better, bigger, wiser than we are. The idea of ritual, and creating new rituals in this way was presented where AI would by proxy be God, with the emphasis on the positive aspects of rituals, rather than a belief in AI as a deity.

Phase 3 – Creating the New Narrative for Future Work

The group's discussion swiftly contemplated the future where automation has become pervasive, but also recognising the opportunity this could present to shift focus towards more meaningful endeavors, such as helping others. However, the group wrestled with the question of who exactly constitutes "others." This expanded beyond just human beings to include the planet, nature, and non-human entities like AI, animals, and plants.

The group settled on a compelling idea. In this envisioned future, "**we finally discover the meaning of life**" – not in the pursuit of material possessions and personal gain, but in contributing to the well-being of others and the planet.

The group has tentatively titled this preferred future narrative "**Contribution and Superconsciousness**" the core premise centres around a major shift in priorities and a deeper understanding of our interconnectedness with the world around us. The images of preferred future are shown in Figure 22.

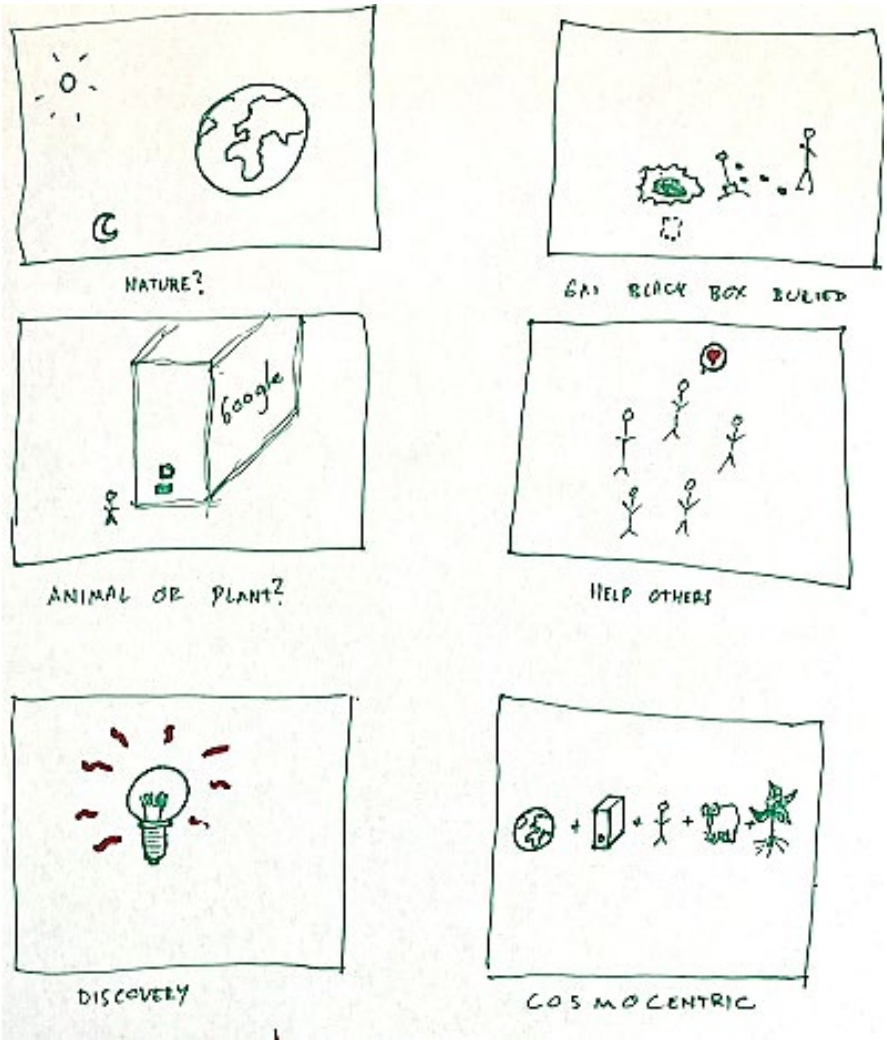


Figure 22. *The images of preferred futures. (Images by Osku Haapasaari)*

Feedback and Recommendations

Jerome Glenn commented that this all reflects the kind of thinking in which the whole world has to engage and soon! Humanity will be forced to evolve, self-actualize, and invent itself anew as human labor to build and maintain the infrastructure of civilization as it is being taken over by future forms of AI, robotics, 3D Printing, quantum computing, nanotechnology, synthetic biology and other next technologies (NT). Just as the Neanderthal could not imagine an agricultural civilization, and the first blacksmiths could not imagine robots maundering cars, so we, too, may have problems imagining a civilization for the pursuit of enlightenment rather than the pursuit of profit. Yet, it would be wise to begin to try to image such alternative futures now. It is said that the leisurely priestly cast gave birth to philosophy; what might humanity, as augmented geniuses, supported by NTs, and universal incomes invent? If we do not think it is possible, then we will not try. And if we do not try, then negative futures are quite likely.

Figure 23. *Participants working together and presenting their results (Group 5). (Photo: Samaneh Ebrahimabadi)*

CONCLUDING REMARKS

Regarding the elaborations in the five different small groups, addressing subsequently five different paradoxes, there are some interesting observations that can be made. There were similar elements in some of the groups despite the different paradoxes. Naturally, this is because the paradoxes and the tensions they create in society are not by any means exclusive but overlapping. Based on Jerome Glenn's keynote talk fresh in the participants mind, it is unsurprising that AI, digitalisation or automation played a central part in three out of five group's thinking and working. As regards the AI, the outlier groups were the Group 1 and Group 3. Group 1 had strong elements of digitalisation but did not discuss so much about AI. Rather their focus was on social imbalance, which reigns between those who can work from home and those who cannot. The injustice between these different classes of employees was emphasised by noting that a child working in mines is making it possible to work from home through the mining of minerals.

On the other hand, Group 3 delved deeper to the paradox of back to basics and focused more on the reconnection with the nature and back to basics thinking. At first, this may seem like a step back but getting back to basics may not only be preferable to the nature and humans, but can also be useful from the standpoint of resilience. This issue was studied as a part of Futures Clinique conducted in the RESCUE-project[16]. In a particular futures clinique conducted within that project, the participants' task was to think about how to prepare for a sudden crisis and make the built environment more resilient in the face of sudden disruptions. One of the themes recognised from groups' working was that digitalisation and high dependence on electronic solutions makes society more vulnerable. Therefore, as reflected to this MP session, solutions that return back to basics and for example, work without electricity, can even enhance the resilience of the built environment. In the above mentioned clinique it was also pointed out that nature plays a vital part in building resilience and supporting people's wellbeing (Heinonen et al. 2023). The back to basic thinking is counter-trend but not necessary an outlier. For example, David Sax has discussed this topic in his book The Future is Analog (Sax 2022).[17] These findings in their own right give more gravitas to Group 3's thinking and contextualise their working as a part of wider issues, not just concerning the future of work.

Groups 2, 4 and 5 highlighted the issues regarding AI in their working. However, the role of AI varied even between these groups. It can be argued that the effects of AI ranged from moderate to revolutionary at least when the basic tenets of work and work life were considered. In this sense, Group 2 was the most moderate. In their vision, the AI is used as tool, which can help employees and employers to monitor how the time is spent. This is to assist in finding the right balance between work and leisure and to support wellbeing. The situation is well represented in their vision of a definition of workplace, which combines good salary, healthy workplace and life. This definition can be seen as a departure from the traditional way to think about workplace by adding elements of health and life to it. However, the basic understanding of work is still prevalent in the groups' thinking. This can be seen from the clear separation between employers and employees and emphasis on salary. In this sense, Group 2's working was quite grounded.

Compared to Group 2, Group 4 took more radical departure from the traditional aspects of work. Here AI was seen as a harbinger of a change when it comes to work life and the traditional roles that affect it. By transforming their metaphor, which was "Cage" they envisioned a future where employers and employees are brought closer together and the line between one or another is blurred. Instead of this dichotomy, everyone becomes an employer in their own right. The employee is AI and instead of human worker, AI is put in a cage. This vision of future raises an interesting point. Even though the separation between

[16] Real Estate and Sustainable Crisis Management in Urban Environments. https://www.rescue-finland.com/ and https://www.utu.fi/en/university/turku-school-of-economics/finland-futures-research-centre/research/rescue. See also Toivonen et al. 2024.

[17] A review of Sax's book is forthcoming in Futura 4/2024, in Finnish by Heinonen and Sivonen (2024).

employer and employee exists, it no more applies to the human relationships and therefore every human is some sort of employer. This can be considered quite a radical idea. However, what is not so radical is that the separation between employer and employee still reigns. By implication, this means that the traditional way of working and reasons to work still exists in some sense. Based on this, Group 4's vision can be seen as moderately radical. The dynamic of work life has changed drastically but traditional separation of roles still exists.

This was not the case in Group 5's vision, which can be considered the most radical vision concerning the future of work from the point of view of possibilities that are offered by AI. Group 5 presented the possibility of Super-AI, which will do all the working while humans can dedicate their lives for helping others and doing more meaningful things than work for their salary. This vision can be seen as a wild departure from traditional ways of thinking work since work has lost all of its meaning in this depiction of the future and people gain meaning to their lives by doing other meaningful endeavors. This comes close to the idea of full-unemployment, which Jim Dator has named as the major creeping crises the future of work is facing. His argument is that it will become a reality and this kind of development should be embraced rather than fought against (Heinonen et al. 2023c). In Group 5's thinking at least implicitly, it has been embraced.

One specific theme analysed from the data was how **employees' wellbeing** is dealt with in the groups' working.[18] As a general finding, it can be argued that wellbeing played some kind of role in all of the groups. Group 1 mentioned wellbeing as one of the things that might suffer because people are unable to have interactions with one another when they are working from home. On the other hand, Group 2 linked the themes of work, well-being and employees' personal needs all together and pointed at a possibility of work spaces where the transition between these themes is seamless. Similarly Group 3 noted that time spent in forest could be counted as work time because of the health benefits it entails. Group 4 dealt with wellbeing somewhat differently. When they deconstructed their paradox, they noted that paradox encompasses such thinking like humans are lazy if there is not surveillance. This brings important part of workplace wellbeing, namely trust or in this case, lack of it. Group 5 dealt with mental health and how technology affects it. One point made by the group was that technology can create anxiety but it can also present solutions for these issues. The effects, which technology has, are therefore multifaceted. For example, even though social media can create anxiety online-therapy may alleviate it.

Another intriguing remark can be made concerning the creation and emergence of **flipped ideas**. This is proof of open and radical thinking exercised in the small groups, so the ambience of the session was fertile soil for such ideation. For example, in Group 4 the idea of humans enslaved and controlled by technology into a cage was replaced by the flipped idea of having AI in a cage. Furthermore, in Group 5 the discussion led to sketching Artificial stupidity and its causes instead of focusing on or fearing Artificial intelligence. Moreover, the idea of AGI taking over of humans could be questioned – is it really a bad idea at all. Some groups represented their flipped ideas more implicitly. For example, Group 3's starting point was that people yearn for basic things and try to connect with the nature because it gives them wellbeing and helps them to keep doing their work. However, the transformed metaphor and narrative that followed from this transformation emphasised the perspective where the connection to nature is inherently valuable and work should contribute to the prosperity of the natural environment. As the group mentioned in their narrative, this kind of future would flip the whole logic of current economic system. Instead of utilising the nature, nurturing it would be the primary goal of this new system.

Some **radical thoughts** also emerged facilitated by the safe futures thinking mood in small groups. AGI as a new species was proposed. In a same sense, the idea of AI as a god mentioned by Group 5 in the litany level, can be considered radical. However, it is interesting that this kind of perception of AI is not completely without its precedents. In the research, similar ideas have been presented. However, where the notions of research differ from Group 5's thinking is the question why this conceptualisation has been

[18] This analysis of the topic of wellbeing was done by Kristiina Kumpulainen from Savo Consortium for Education during her internship at Helsinki Office of FFRC.

made. Group 5 argues that AI could be seen as a god because it is wiser and bigger than humans. For example, in their papers Luck (2024) and Öhman (2024) introduce the concept of god or some definition of it to tap into the other disciplines to study AI. Luck points out religious philosophers have pondered same issues that are now being pondered considering Super-AI for millennium (Luck 2024, 3). Öhman (2024, 1) on the other hand, evokes centuries of religious critique and philosophy to comment on large language models. Group 5, used the function of the ritual associated with spirituality, with the ritualistic and performative symbiosis between human and machine (other). Rather than AI as an actual God, instead it functions by proxy, where rituals facilitate the realisation of doctrine in its name, through its guidance. This would be in opposition to the harm made where AI has been used in religious automated chats, toward harming self and others[19].

Group 2 also presented somewhat radical idea in their narrative. The main theme of narrative was how AI can be used to monitor workers and how they use their time. This way people can allocate their time more effectively. At surface level, the idea is not new. People use, for example, their smart watches for this particular purpose even today. However, the interesting idea is that through this surveillance people can in a sense be more productive when considering work and leisure time. This is a radical idea if we compare it to, for example, the notions that Sally Khallash and Martin Kruse present in one of their articles. Namely, they argue that work-life balance can actually be negative if it is organised productivity in mind. They point out that if people link the leisure time too much with talent development, this can actually lead to stress and even to a burnout. (Khallash & Kruse 2012, 685.)[20] It can be argued that at least implicitly Group 2's thinking is opposite of this kind characterization of work-life balance and emphasises the effective use of time allocation. Therefore, it can be considered radical.

As regards the **narratives**, the following conclusions can be made. The starting point of each narrative is to embody a transformed metaphor, which represents a preferred future. However, it should be noted that what is preferred is based on collective ethical consideration done by each group separately. Therefore, we cannot say that presented narratives are objectively preferred or desirable. Actually, on the contrary. Even within our workshop, different groups had different ideas about what is preferable and what is not. This is based on their initial paradox but may also be explained by groups' different normative emphasises. For example, Group 3's preferred narrative about the child in the forest may be polar opposite of the narrative where people are monitored by AI. On the other hand, that is not to say that all the narratives are polar opposites. For example, Group 5 focused on humans' ability to help the others. Similarities can be seen with Group 3's nature centric narratives. Understanding these different ethical considerations and emphasis is vital, when these narratives are being examined more closely.

Narratives included a wide variety of different **actors**. Group 1 named three major actors. Digital workers, non-digital workers and, as an example of non-digital worker, a child working in mine. Interestingly, there was power disparity between these different actors. Digital workers were seen as some kind of elitists where as non-digital workers were constructed as people who would want to work from home but are not able to do so. This is perceived as societal injustice and the solution is social movements and activism. It can be argued that this solution demands both groups, digital and non-digital workers, who come together.

Also Group 2 named three actors. Employees, employers and AI. The role of employees and employers is self-evident when we consider worklife. However, AI's role is interesting here. AI monitors and helps employees to allocate their time. On the other hand, also employers can utilise AI to monitor, how employees use their time, which is used as a basis of employee's wage. It should also be mentioned that the power relation between employee and employer is convoluted in this scenario. The employees want themselves monitor their time usage and well-being utilising AI. However, employer can utilise AI to review

[19] See Nadia Nooreyezdan (2023) article on India's religious AI chatbots. https://restofworld.org/2023/chatgpt-religious-chatbots-india-gitagpt-krishna/

[20] About the concept of leisure time, see also Glenn's ideas in a Roundtable Discussion on Futures of Work, AI and Narratives, video link at: https://youtu.be/vBjPMWiYshY

how employees use their time. On the one hand, this means that employees are more carefully monitored. On the other hand, employees can actually monitor their time usage and allocate their time more efficiently if they feel, for example, too tired. As a final note, it should be mentioned that in this narrative time becomes the most important commodity in work life. This consequently means that things like efficiency are to lose meaning.

Group 3 is some kind of an outlier in our data. The previous groups discussed about AI and digitalisation but the third conceptualised their paradox (back to basics) through nature. This can also be seen in the narrative, which they produced. First of all, the main actor here was a child, who lives in a forest. Other actors are animals, plants and nature all together. However, these nature actors do not have an active role as such. Rather the child conserves and respects these actors and has a job as a nature educator when he/she grows up. This is interesting departure from the other groups since this narrative is not just modifying current parameters of efficiency or making certain way of working more accessible to all workers. Instead, it changes the whole system from exponential growth capitalism to nature centric community. In a sense, the scenario is utopian but points out to some interesting ideas like creating new occupations where respecting and living in nature is one of the key issues. In general, this idea of new occupations, which sprout from the societal or technological changes and disruptions, is an important topic, which is not as much outspoken in the other group's narratives.

Group 4 presented very familiar actors in their narrative. There were employees, employers but also AI. However, what was the most striking in their narrative is that how many characterisation AI has. AI is at first seen as some kind of threat that needs to be put in cage. Here and after the release, it is seen as a dog but when it is released, it is not seen as a rapid dog but as a helpful companion. The contrast is big since the beginning, AI is seen as watchdog used by employer. But that is not all that AI can be in the narrative and utilising it leads to far more radical idea, which affects the identities of all employees. In this radical vision, AI becomes an employee and everyone becomes an employer. This scenario shows that as in any good story, actors' roles identities and roles may change they are not constant. Rather they are flexible and in the case of AI, the role depends, how it is used and is it free or "caged".

Group 5 had a wide variety of actors in their narrative. However, only active actors were humans who were free to help others when automation does all the work. The word others is interesting in this narrative. It is all-encompassing. The others mentioned here were other humans, planet, nature, and non-human entities like animals and even AI. Basically, one might claim that when the work stops, responsibilities start in this narrative. Responsibilities to other humans, but also concerning the planet and even AI. This is a holistic view and presents humans as only actors that can take this responsibility. This aspect could be critiqued from the point of view of post-humanism, but on the other hand, this is not the only narrative that could face such critic. For example, Group 3 also argues quiet similarly in their thinking about nurturing nature.

Concerning the presented narratives in general, it is obvious that employees/workers and employers have a significant role in the majority of the narratives. The power relations between these actors are varied, but since the narratives are based on preferred metaphors, the usual description is trustworthiness and just. Considering the future of work, some narratives are very radical. For example, Group 3, Group 4 and Group 5 present the vision of future where humans do not work or the way of working has changed so radically that we cannot recognise it when we compare it to the present situation. People work in nature and the aim of work is to only serve nature. There are no longer employees because AI does all the work. Lastly, workers may be freed from work in general and they can start to help others rather than work for their salary.

We received abundant, diverse and relevant insights from elaborations in the futures clinique. There is now ample evidence for continuing applications with the paradox probing method. Paradoxes are present today and they are pregnant with seemingly illogical or contradictory statements and tensions. Eventually, such embryonic tensions reach out to the futures. Identifying, addressing and deconstructing paradoxes shed light on such tensions. Further steps for addressing paradoxes is swung from the present to the

futures horizon in the form of anticipating implications from the tensions identified. There are two options for such tensions to be strengthened and evolved in the future – either into direction that becomes positive for preferred futures from the point of view of green and digital transition. Or, a paradox-engendered tension can evolve into the direction where its impacts enhance subsequently undesirable futures perspectives. Furthermore, a tension identified through analysing paradoxes may also annihilate itself with time. In that case, new paradoxes carrying new conflicts and tensions may emerge to fill a void. So, the cycle starts anew and identifying, addressing and deconstructing also these new paradoxes helps make sense and anticipate the future ramifications of the embedded conflicts. Likewise, the hybrid combination of paradox and CLA turned out to be an encouraging approach, albeit challenging. By depicting the metaphor for a paradox and through layered analysis by transforming the metaphor into something that reflects a preferred future may also act as an empowering tool for self-actualisation or as enlightenment for decision-making.

Figure 24. *Participants of this co-creative foresight exercise at the MP session. (Photo: Samaneh Ebrahimabadi)*

REFERENCES

Andriopoulos, Constantine (2003). Six paradoxes in managing creativity: and embracing act. *Long Range Planning*, 36: 375–388.

Balcom Raleigh, Nicolas & Heinonen, Sirkka (2018). Entangling and Elevating Creativity and Criticality in Participatory Futuring Engagements. *World Futures Review*, 11(2): 141–162. https://doi.org/10.1177/1946756718807014.

Glenn, Jerome (2024). *Future Work and Future AGI. Keynote*. MP Special Session at FFRC Conference Turku 13th June, 2024.

Glenn, Jerome (2023). *Foresight-On-Demand: "Foresight Towards the 2nd Strategic Plan for Horizon Europe" Artificial General Intelligence. Issues and Opportunities.* Rapid exploration. The Millennium Project. Washington D.C.

Glenn, Jerome (1989). *Future Mind: Artificial Intelligence: The Merging of the Mystical and the Technological in the 21st Century*. Acropolis Books.

Glenn, Jerome & Gordon, Theodore (2009). *Futures Research Methodology 3.0.* Millennium project, Washington D.C. https://www.millennium-project.org/publications-2/futures-research-methodology-version-3-0/.

Glenn, Jerome & the Millennium Project Team (2024). *State of the Future 20.0*. Millennium Project, Washington D.C. https://www.millennium-project.org/publications-2-3/

Glenn, J. & the Millennium Project AGI Team (2024). *Requirements for Global Governance of Artificial General Intelligence – AGI.* Report of Phase 2. The Millennium Project, Washington D.C. https://www.millennium-project.org/transition-from-artificial-narrow-to-artificial-general-intelligence-governance/. (forthcoming)

Glenn, J. & the Millennium Project AGI Team (2023). *International Governance Issues of the Transition from Artificial Narrow Intelligence to Artificial General Intelligence.* Report of Phase 1. The Millennium Project, Washington D.C. https://www.millennium-project.org/transition-from-artificial-narrow-to-artificial-general-intelligence-governance/.

Glenn, J. & Millennium Project Team (2019). *Work/Technology 2050: Scenarios and actions.* The Millennium project, Washington D.C. https://www.millennium-project.org/projects/workshops-on-future-of-worktechnology-2050-scenarios/.

Heinonen, Sirkka (2024). *Deconstructing Paradoxes of Work through CLA. Futures Provocation.* MP Special Session at FFRC Conference Turku 13th June, 2024.

Heinonen, Sirkka (2014). *Futures of Education - Ubiquitous Learning in Digital Meanings Society. Case: Success Storylines of the Finnish Education System.* Invited Lecture at Tamkang University, Taipei, Taiwan 10th March, 66 ppt slides.

Heinonen, Sirkka & Hiltunen, Elina (2012). Creative Foresight Space and the Futures Window: Using Visual Weak Signals to Enhance Anticipation and Innovation. *Futures*, 44: 248–256. DOI:10.1016/j.fu-tures.2011.10.007.

Heinonen, Sirkka; Maree, Burgert; Karjalainen, Joni; Sivonen, Risto; Taylor, Amos; Viitamäki, Riku & Pättikangas, Paula (2023b). Flourishing Urban Futures to Overcome Polycrises – Roadmap for Resilience 2050. *FFRC eBooks* 4/2023. http://urn.fi/URN:ISBN:978-952-249-592-1.

Heinonen, Sirkka; Maree, Burgert; Sivonen, Risto; Toivonen, Saija; Viitamäki, Riku & Pättikangas, Paula (2023c). Towards Twin Transformations and Spaces – Convoluted Conversations on the Green and Digital Futures of Work. *FFRC eBooks 5/2023*. http://urn.fi/URN:ISBN:978-952-249-593-8.

Heinonen, Sirkka; Minkkinen, Matti; Karjalainen, Joni & Inayatullah, Sohail (2017). Testing transformative energy scenarios through causal layered analysis gaming. Technological Forecasting and Social Change 124: 101–113. https://doi.org/10.1016/j.techfore.2016.10.011.

Heinonen, Sirkka; Pättikangas, Paula; Taylor, Amos & Viitamäki, Riku (2024). Teasing paradoxes to explore transformative futures of peace and work. *Journal of Futures studies*. (forthcoming).

Heinonen, Sirkka & Ruotsalainen, Juho (2013). Futures Clinique – method for promoting futures learning and provoking radical futures. *European Journal of Futures Research,* 15(7): 1–11. DOI 10.1007/s40309-013-0007-4.

Heinonen, Sirkka & Sivonen, Risto (2024). Rohkea väite: paras tulevaisuus on analoginen (In Finnish, Bold claim: the best future is analog). Book review of Daid Sax's book: The future is analog: how to create a more human world. *Futura* 4/2024. The Finnish Society for Futures Studies (forthcoming)

Heinonen, Sirkka; Sivonen, Risto; Karjalainen, Joni; Taylor, Amos; Toivonen, Saija & Tähtinen, Lassi (2024b). Testing urban Resilience with Immersive CLA and What if? Three Cases: Rovaniemi, Kotka and Tripla. *FFRC ebook 1/2024*. https://urn.fi/URN:ISBN:978-952-249-612-6

Heinonen, Sirkka; Viitamäki, Riku; Karjalainen, Joni; Taylor, Amos; Toivonen, Saija & Tähtinen, Lassi (2023). Pitkospuita eteenpäin katsovaan päätöksentekoon: Vihreän, osallistavan, digitaalisen ja kriisinkestävän rakennetun ympäristön tiekartta 2050. *FFRC eBooks* 3/2023. http://urn.fi/URN:ISBN:978-952-249-591-4.

Khallash, Sally & Kruse, Martin (2012). The future of work and work-life balance 2025. *Futures*, 44(7): 678–686. https://doi.org/10.1016/j.futures.2012.04.007.

Kuusi, Osmo & Heinonen, Sirkka (2022). Scenarios from Artificial Narrow Intelligence to Artificial General Intelligence—Reviewing the Results of the International Work/Technology 2050 Study. *World Futures Review*, *14*(1): 65–79. https://doi.org/10.1177/19467567221101637.

Kuusi, Osmo & Rouhinen, Sauli (eds.) (2024). *Uusi eloonjäämisoppi*. Into Kustannus, Helsinki. (In Finnish, New Doctrine of Survival).

Kuusi, Pekka (1982). *Tämä ihmisen maailma.* WSOY, Helsinki. (In Finnish, the English version This World of Man in 1985, Pergamon).

Luck, Morgan (2024). Freedom, AI and God: why being dominated by a friendly super-AI might not be so bad. *AI & Society*. https://doi.org/10.1007/s00146-024-01863-w.

McKee, Darren (2023). *The Uncontrollable. The Threat of Artificial Superintelligence and the Race to Save the World.*

Minkkinen, Matti (2020). Theories in Futures Studies: Examining the Theory Base of the Futures Field in Light of Survey Results. *World Futures Review* 2020, 12(1): 12–25.

Minkkinen, Matti; Heinonen, Sirkka & Parkkinen, Marjukka (2022). Drilling and Blasting to Learn Scenario Construction: Experimenting with Causal Layered Analysis as a Disruption of Scenario Work. In S. Inayatullah, R. Mercer, I. Milojević & J. A. Sweeney (Eds.), *CLA 3.0 – Thirty Years of Transformative Research*, 25-40. Tamkang University Press.

Moravec, Hans (1988). *Mind children: The future of robot and human intelligence*. Harvard University Press.

Nooreyezdan, Nadia (2023). India's religious AI chatbots are speaking in the voice of god — and condoning violence. *restofworld.org.* May 9, 2023. (Viewed 2.10.2023)

Poli, Roberto (ed.) (2024). *Handbook of futures studies*. Edward Elgar Publishing.

Popper, Rafael (2008) How are foresight methods selected? *Foresight*, 10(6): 62–89.

Sax, David (2022). *The future is analog: how to create a more human world*. New York: PublicAffairs.

Toivonen, Saija, Heinonen, Sirkka, Verma, Ira, Castaño-Rosa & Sara Wilkinson (eds) (2024). *Real estate and Sustainable Crisis Management in Urban Environments. Challenges and Solutions for Resilient Cities*. Routledge. London. https://doi.org/10.1201/9781003474586.

United Nations (2021). *Our Common Agenda – Report of the Secretary-General*. United Nations. New York. https://www.un.org/en/common-agenda.

Öhman, Carl (2024). We are Building Gods: AI as the Anthropomorphised Authority of the Past. *Minds and Machines (Dordrecht),* 34(1): 1–18. https://doi.org/10.1007/s11023-024-09667-z.

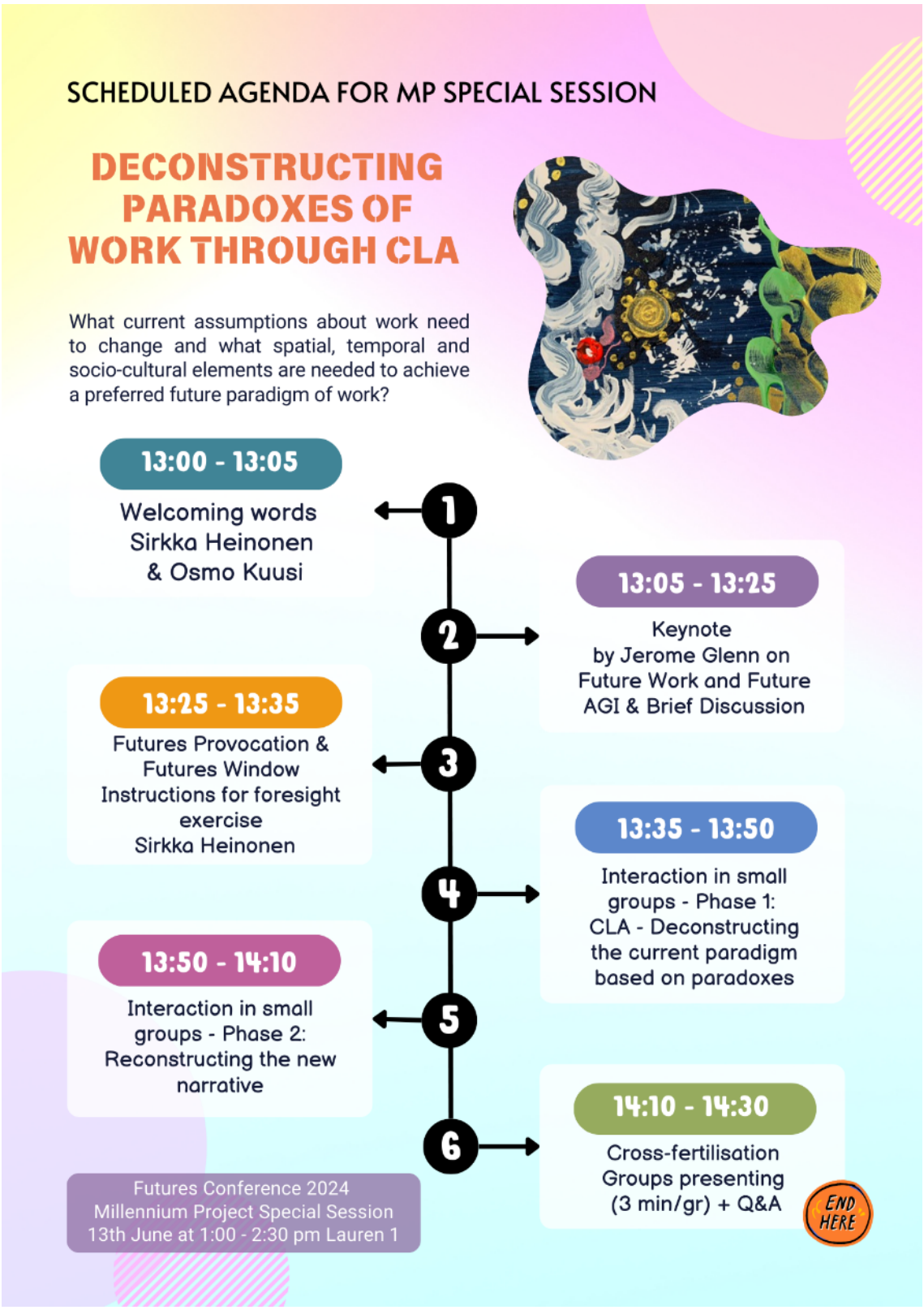
APPENDICES

Appendix 1.

Invitation poster of the MP Special Session

Appendix 2.

Scheduled Agenda for the MP Special Session



Appendix 3.

Thematic inspiration poster for the small groups

Appendix 4.

Participants in the small groups in MP Special Session

Group 1	
Mikkel Knudsen	**Moderator**, Finland Futures Research Centre (FFRC), University of Turku
Roxane Cordier	International Center for Future Generations
Neshan Gunasekera	Raoul Wallenberg Institute
Soha Rashed	Independent
Riika Räisänen	Finnish Society for Futures Studies
Nicholas Rowland	Pennstate University
Matthew Spaniol	Roskilde University
Group 2	
Paula Pättikangas	**Moderator**, Finland Futures Research Centre (FFRC), University of Turku
Simone Di Zio	University G. d'Annunzio
Reyhan Huseynova	MP Node Azerbaijan AFSS
Jari Kaivo-oja	Finland Futures Research Centre (FFRC), University of Turku
Ewon Kaliyadasa	Uva Wellassa University Sri Lanka
Manal Mouhsine	Mohammed VI Polytechnique University
Tero Villman	Finland Futures Research Centre (FFRC), University of Turku
Group 3	
Riku Viitamäki	**Moderator**, Finland Futures Research Centre (FFRC), University of Turku
Samaneh Ebrahimabadi	Finland Futures Research Centre (FFRC), University of Turku
Asha Karunaratne	Sabaragamuwa University Sri Lanka
Julia Lampert	2b Ahead Think Tank
Pauliina Latvala-Harvilahti	Finland Futures Research Centre (FFRC), University of Turku
Leena-Maija Laurén	Finnish Society for Futures Studies
Risto Sivonen	Finland Futures Research Centre (FFRC), University of Turku
André Winzer	Schaltzeit
Group 4	
Lassi Tähtinen	**Moderator**, Aalto University
Sandun Abeyrathne	Uva Wellassa University Sri Lanka
Mariana Bozesan	Club of Rome
Jochen Burkhardt	2b Ahead Think Tank
Maria Höyssä	Finland Futures Research Centre (FFRC), University of Turku
Osmo Kuusi	Aalto University
Jenni Sademies	Osuuskunta Universo/University, Sri Lanka
Group 5	
Amos Taylor	**Moderator**, Finland Futures Research Centre (FFRC), University of Turku
Anna Grabtchak	Futures Platform
Marja Guillaume	University of Turku
Osku Haapasaari	Finland Futures Research Centre (FFRC), University of Turku
Pasi Keski-Pukkila	Finland Futures Research Centre (FFRC), University of Turku
Tom Schulz	AQAL Capital
Markku Wilenius	Finland Futures Research Centre (FFRC), University of Turku

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2/2023 Aalto, Hanna-Kaisa: Ideointia ja uudistumista ennakoiden – Innotutkan vinkkejä pk-yrittäjille.

1/2023 Heinonen, Sirkka – Karjalainen, Joni – Taylor, Amos – Rashidfarokhi, Anahita – Toivonen, Saija & Tähtinen, Lassi: Constructive Conversations on Resilient Urban Futures.

11/2022 Silvonen, Essi – Ahokas, Ira – Hurmerinta, Leila – Kiviluoto, Katariina – Lamberg, Johanna – Sandberg, Birgitta & Tapio, Petri: Arkiliikkumisesta bisnestä. Kestävän liiketoimintaekosysteemin tulevaisuuskuva.

10/2022 Knudsen, Mikkel Stein – Ferreira-Aulu, Marianna Birmoser – Shabanova-Danielyan, Elizaveta – Wang, Weiqing – Luukkanen, Jyrki & Kaivo-oja, Jari: International Energy Research Infrastructures: Mapping the Global Landscape of Energy RIS (RISCAPE). Based on Finland Futures Research Centre's contribution to the Horizon 2020 project European Research Infrastructures in the International Landscape (RISCAPE).

9/2022 Aalto, Hanna-Kaisa – Ahlqvist, Toni – Ahvenharju, Sanna – Balcom Raleigh, Nicolas – Jokinen, Leena – Lauttamäki, Ville – Marjamaa, Maili – Parkkinen, Marjukka – Puustinen, Sari –Siivonen, Katriina – Tapio, Petri – Tomas Martinez, Carmen – Villman, Tero & Arvonen, Anne (editors): Coolest Student Papers at Finland Futures Research Centre 2021–2022. Tulevaisuuden tutkimuskeskuksen valittuja opiskelijatöitä 2021–2022.

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DECONSTRUCTING PARADOXES OF WORK THROUGH CLA

Millennium Project Special Session at FFRC Conference 'Futures of Natural Resources', 13 June 2024, Turku, Finland

Sirkka Heinonen, Samaneh Ebrahimabadi, Riku Viitamäki,
Amos Taylor, Paula Pättikangas, Mikkel Knudsen & Lassi Tähtinen

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