ChatGPT a powerful assistant, when using Double-Loop Co-Design

-Right now, is a very, very interesting time to be alive-

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Abstract. Computers can now carry out tasks, by first learning from being given examples, rather than just doing exactly what they are told, this is often referred to as Machine Learning or AI.
This has given almost endless possibilities what these machines can ultimately do. At the same time, it also gives us many threats and things to worry about from a safety, security and ethical point of view and voices are raised that we should control what AI is allowed to do by laws and regulations.
By applying a Double loop Co-design approach to science this paper focusses on ChatGPT and researchers experience with effectiveness and ethics related to use o this tool. 3 workshops were conducted with totally 14 participants from 5 continents. Most of the respondents are positive and excited about what Chat GPT and AI can do for us, but they are also worried. The main concerns are that AI will do the creative and fun parts of our work and that it produces false facts.
In conclusion, if applying a perspective conscious view of knowledge, AI can inspire human controlled creativity and informed decision making with multi-perspective views of reality.

Keywords: ChatGPT, OpenAI, AI, Machine Learning, Natural Language, Co-Design, Research Ethics.

1 Introduction

1.1 Background

Ever since the early days of computing, dating back to late 1930s and conceiving the Turing Machine (Saha et al., 2023), scientists and practitioners have strived for creating truly useful and 'intelligent' technical systems. In the beginning we named them computer-systems and data-systems, then it became a common view that computer-systems could perform all kinds of intelligent tasks at high speed, including networking.

Later, we started to talk about Information-systems, digital knowledge systems and social media. When we saw that the knowledge systems together with transformed organisations, could result in even more useful and intelligent behavior, we started to talk about digital transformation. During all this time we had to command computers what to do, programmed in computer languages. These commands resulted in electronic patterns (smart algorithms) that control what the computer will do.

In parallel with this development there has been work going on to train computers to do what we want them to do by giving them examples - This way of commanding computers we now normally call AI (Artificial intelligence) If we for example show the computer application a dog and then ask the computer application what do you see? If the computer application answers, "a dog", it gets the feedback," OK". When it says something else than a dog it gets feedback," Not-OK". With machine learning techniques we can let the computer try repeatedly. During that time the computer builds up the electronic pattern that controls its further behavior. As a result, a well-trained computer application almost always says this" is a dog" when we show a dog. This technique has now been applied to languages and pictures which have resulted in powerful computer applications, able to communicate in normal language, performing to do what we train them to do. Thereby we can create really powerful computer applications (CA).

Looking at the current available AI tools, e.g. ChatGPT, it certainly opens many possibilities, but is it actually useful in research when it comes to writing and editing text? And if so, is it acceptable to use it from an ethical point of view? Also, in parallel with the above, there has been a lot of work and conversations within philosophy and theory of knowledge which seems to converge into a perspective conscious view of knowledge. That means knowledge as more or less useful perspectives of reality instead of traditional view of scientific knowledge as objective more or less precise depictions of reality. Still, we see no convergence on the optimal way to produce knowledge as useful views of reality even if many prominent researchers within computer and systems science have adopted a perspective conscious view of knowledge. When a perspective conscious view of knowledge has been applied into development of computer applications that is known as agile Co-design or agile-systems development. The adaptation of perspective conscious Co-design approaches for development of computer applications in private companies has been very fast, so now we can say that most computer applications globally are developed with Co-design approaches.

The adaptation of a perspective view of knowledge we see emerging slower within knowledge development activities, like scientific research. In our view it is important to try different methods to produce knowledge as useful views. Therefore, the present study is based on a Double loop Co-design approach to science. The focus is the use of AI, in this case ChatGPT. We use researchers with different backgrounds (e.g. computer science, psychology and informatics) to analyze the data.

We develop some more arguments on how we apply a perspective view of knowledge in the following parts.

1.2 Key Concepts

Double loop Co-design approach. West Churchman, a pioneer Co-Designer stated that one can design an infinite number of views of reality: detailed or just an overview.

Double loop thinking refers to a critical evaluation of the concepts that the current knowledge is based on (Argyris and Schön, 1996). Co-design (or Co-creation/Co-production) implies that different interests of the designed service, product or delivery should be considered before the knowledge is frozen in a value proposition (Norman, 2004; Normann, 2001; Osterwalder and Pigneur, 2010). There are now many cases of prosperous implementations of Co-Design thinking.

"To design a common system, it is necessary to have input from their scholars" (Liu, Sun, and Bennett, 2002). This assembly of designing processes and selecting the most suitable one is called Co-Design. This has shaped the common system desired by" all" the participants (Ackoff, 1981; Checkland and Scholes, 1999; Mitroff and Mason, 1981). However, "it is important to know that the notion of Co-Design is considered beyond the notion of participatory design" (Mumford and Mumford, 1981). The main idea in Co-Design is both a scientific approach and a development approach; there is a close relation between innovative product/service development and knowledge creation (Norman, 2004).

"The relativist would argue that there are an infinite number of ways to describe an apartment or a dead human being. The Co-Designer agrees, but also says if the human culture is going to develop, someone has to decide on which" description"/view to use, and that is an act of politics, ethics and aesthetics" (Forsgren, 2006b). Forsgren has also, in many publications, described how a Co-design view can be implemented in computer applications as agile Co-design computer applications (Forsgren, 2006a).

As stated in (Forsgren et al., 2014) also the management process behind the decision of used views is regarded as meta-Co-design process. The reader can object that also the meta-process will have a meta-meta, and so on, in an infinite number of Meta Co-design processes. In our view we have merged all meta-processes into the Meta Co-design process, and together we name our approach Double Loop Co-design approach.

This is not as strange as it might sound - as an example shows. In order to Co-design a suggestion, for instance time for legal abortion, we also have to meta Co-design the Co-design process in itself. We also think of the Meta Co-design process as a loop. That means that also the Co-design process must be evaluated and re-designed. This design principle remains of the separation between constitutions and laws in many western democracies.

The Co-design process can be summarized in a raw model as four types of workshop activities.

Fig. 1. The Co-design Innovation Process (Forsgren et al., 2010).

1) Co-design of the problem situation and ideal scenarios including a first idea of useful views possible to implement in integrated solutions (Step 1: In my view, this is a problem).

2) Co-design of one or a few specified useful views with implementation integrated solutions and related measure of performance systems (Step 2: I'd like to have it this ideal way).

3) Co-Implementation of selected integrated solution and related measure of performance systems (Step 3: I hope these solutions will get me to my ideal way)

4) Co-evaluation and feedback based on key stakeholder views (Step 4: Did "these solutions" bring me closer to my ideal way?).

To these four activities we could add a fifth

5) Co-design inspired people to evaluate and make a Meta Co-design of the Co-design process itself.

The updated model will then look something like this. If and how the Co-design process itself can be developed to be more effective in producing knowledge and service.

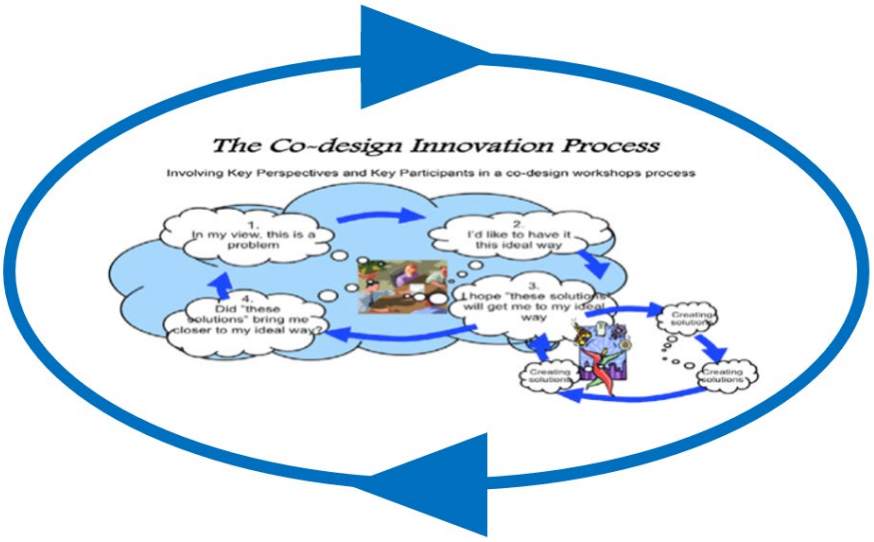

Fig. 2. The Double-Loop Co-design Process Co-design Innovation Process

Now we have a model of five types of workshop activities where the fifth activity concerns" if and how the Co-design process itself can be developed in order to be more effective in producing knowledge and services" (Forsgren et al., 2012).

In previous projects, it has also been important to run some pre Co-design workshops in order to find out what challenge or part of reality we should focus on. In this paper we jump over these workshops and just say we focus on AI and the use of AI.

A general note on Co-design:

We realize our approach to scientific research differs to normal depictive research where the aim is to produce a scientific secured objective evidence-based knowledge about AI. The selected Double loop Co-design approach aims to producing useful perspectives, in this case perspectives about the use of AI, especially ChatGPT. In the model the usefulness of resulting perspectives has to be evaluated of the users themselves. That is also why we encourage involvement in the form of all kinds of comments and suggestions from readers on our paper.

When it comes to applying a double loop Co-design approach to computer applications it is necessary to agree on one Co-designed view as a controlling pattern for the computer applications behavior (Forsgren 1988). Applying a double loop Co-design approach to science it is a bit different since scientific scholars in charge of scientific Journals and Conferences have to judge and agree if the view presented in the paper is of enough quality to be published and presented as a scientific knowledge contribution.

On the other hand - we see a rapid increasing number of both scientific scholars an ordinary people use expressions like" in my/our view or As I/with this background we chose to continue applying a perspective conscious view of knowledge. Now we can identify four different strategies on how to decide on what should be the selected acting perspective regarded as a useful perspective in all types of regulations and in computer applications:

1. **Authoritarian power** a ruling power decides what perspective to apply.
2. **Religious power** a religious power decides what perspective to apply.
3. **Scientific power** a community of scientific trained scholars decide what perspective should be regarded as scientific knowledge and publish that in scientific journals and conferences for further conversation within the scientific community. Politicians and other decision-makers try to follow the scientific conversation - as they summarize as science says. Building on that they make decisions.
4. **Co-creative power** teams of stakeholders Co-design the perspective and related solutions they believe will approach a challenge leading to a better future for all participants. The selected perspective is presented to politicians and other decision-makers. Building on that they make decisions.

Applying this model, we can say that our approach is a mix between 3 and 4.
This paper is written within strategy 3 but we have used a method from strategy 4 also applied in agile co-creative system development - a method that has quickly become dominant globally.
A main episode where we let researchers and knowledge workers in 5 continents participate in Collaborative workshops where they were able to express in different ways their perspective on the use of AI and what advantages and disadvantages, they see with such use.

Chatbots. Chatbots have been developed for various applications, such as customer service, healthcare, and education, by using natural language processing (NLP) techniques to simulate human conversations. Early chatbots relied on rule-based

systems that matched user inputs with pre-programmed responses. However, the advancement in machine learning and NLP has led to the development of more sophisticated chatbots that generate more qualified responses. Large language models like GPT-3 have revolutionized the field of conversational AI by enabling chat-bots to generate human-like responses (Brown et al., 2020). ChatGPT is a variant of GPT-3 specifically designed for conversational applications, allowing users to engage in more natural and human-like conversations.

The development of ChatGPT builds on previous research in the field of conversational AI and NLP. Recent advancements in machine learning models for language understanding and generation have paved the way for more sophisticated chatbots (Radziwill and Benton, 2019) like ChatGPT.

Since the Release of ChatGPT version 3 in November 2022, much research and discussions has been carried out about the use of AI and consequences of the use of AI in various fields, but little research is done from a Double loop Co-design approach. In this paper we are attempting to fill that gap.

2 Method

2.1 Co-Design

This part discusses the research methodology of this study. Three global workshops were designed as described below and Co-design has been used, steps 1 to 4, as follows:

Co-Design Step 1	In my view, this is a problem.
Co-Design Step 2	I'd like to have it this ideal way.
Co-Design Step 3	I hope these solutions will get me to my ideal way.
Co-Design Step 4	Did these "solutions" bring me closer to my ideal way?

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Co-Design Step 5 Can the Co-Design process, in itself, be improved?

The respondents were collected through the network of the Global Research and Education Group (GREG). This part of the study was carried out througn 3 workshops in June 14-16, 2023 (two workshops the 14th and one the 16th). As the participants are based in five continents Zoom was used for all the sessions. All sessions were video recorded and auto transcribed (by Amberscript software tool). Ultimately auto transcriptions were edited by the researchers while revisiting the recordings for improved accuracy. The workshops were conducted primarily with junior and senior researchers in different disciplines and from different parts of the world, se full table of respondents and moderators in Data and Analysis Chapter. Three of the authors were moderators, taking turns in the workshops.

Workshops were carried out in five phases using the same or similar structure in all sessions.

Phase1 Respondents were asked to describe their general life situation as well as work and ultimately a little bit about research specific situation.

Phase2 Respondents were asked to come up with scenarios to try in ChatGPT. Some scenarios were also suggested by the moderators for participants inspiration. The respondents were invited to discuss how 'successful' the scenarios were, i.e. how well they thought ChatGPT managed to carry out the requested tasks.

Phase3 The group then went forward with an ethics, risk and challenge discussion.

Phase4 Involved common evaluation, reflections and wrap-up.

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Phase5 The 5th workshop phase activities (the meta-workshop work) were divided into two parts.

a) An extra feedback loop where the respondents had an opportunity to comment on this paper, before it was published, in harmony with the described Double loop Co-design approach.
b) Some findings of the study were summarized and posted on LinkedIn to a wider group of knowledge workers and comments were collected.

The transcripts from workshops were coded in accordance with the principles of Grounded Theory (Corbin and Strauss, 1990).

3 Data and Results

3.1 Global Workshops

The workshops included 14 respondents active in Africa, Asia, North America, South America and Europe. Ages ranged from 34 to 66. 4 participants were female and 10 were male. The most junior researchers were PhD students and the most senior were full professors as per the summarized table below:

Table 1. Workshop Respondents and Moderators.

Code/ ChatGPT Experience	Age/Gender/ Nationality/	Work Language/ Active Region	Subject Area/ Research Experience
Session 1	**14th of June, 12.30**		
R11	39 f	English	Sustainable SCM
Some	Thai	Europe	Researcher
R12	44 m	Bahasa	Cyber Psychology
No	Indonesian	Indonesia	Senior Researcher
R13	53 m	Spanish	Education
No	Equatoguinean	Spain	Researcher
R14	41 m	English	Finance
Some	Rwandan	Rwanda	Senior Researcher
Session 2	**14th of June, 18.30**		
R22	47 m	Portuguese	Service Quality
Some	Brazilian	Brazil	Researcher
R23	66 m	Portuguese	Knowledge Eng.
Some	Brazilian	Brazil	Senior Researcher
R24	63 m	English	Tech Strategy
some	Swedish	USA	N/A
R25	44 m	English	Data Sc.
Yes	Cameroonian	USA	Junior Researcher

R26	41 m	English	Machine Learning
Yes	Cameroonian	USA/Africa	Senior Researcher
R27	61 m	English	Chemistry
No	Iranian/Swedish	Asia/Africa	Senior Researcher
Session 3	**16th of June, 9.00**		
R31	52 f	English	Org/Leadership/Man.
No	Swedish	Sweden	Researcher
R32	34 f	English	Resource Recovery
No	Swedish	Sweden	Junior Researcher
R33	52 m	English	Finance
Some	Burundian	Rwanda	Senior Researcher
R34	41 f	English	Recycling of Textiles
No	Swedish	Sweden	Junior Researcher
Moderators			
M1	54 m	English	IT/Business
Some	Swedish	Asia/Africa	Researcher
M2	44 m	English	Machine Learning
Yes	Cameroonian/Swedish	Europe	Researcher
M3	75 m	English	Computer Science
Some	Swedish	Europe	Senior Researcher

The transcripts were then coded by two of the researchers' criterion, themes and patterns were identified inductively.

A theme identified was when ChatGPT 'works'. The respondents had the opportunity to try a number of different scenarios and expressed how well they thought ChatGPT was able to solve various tasks.

-**R11**: It's useful, for the newbie It's quite clever

-**R25**: I think it's been my favorite study tool for the past for the past eight months since I enrolled in-to the program. So definitely it's something that I'm going to work with for a very long time because it helps me a lot, especially in model development and the techniques to use to handle big data.

-**R11** (wanted to know: How does a company in textile implement circular economy and disclose the sustainability performance?) and expressed: It's good. That is like and it's focused on environmental and social performance. Value-chain. And the standard here is both general and then the textile standard.

-**R27** interesting tool to enhance and accelerate knowledge production.

-**M3** identify new ideas and to identify new inspiration

-**R31** could be kind of inspirational, but I could never, ever use it because that's the only thing I do. That's, you know, being a carpenter and asking someone else to build a house.

R23 Even. Without ChatGPT, for example. But in terms of the learning for my people, it's a strong, very, very strong first. They can interact. Second, they have agility. They can use a lot of information that otherwise is not available.

R25 So I wrote my elevator speech and then copied that and pasted it in ChatGPT. Like everything was from me originally. And then ask ChatGPT if I have to present what I have written here to a potential recruiter for a role in such an institution, because

I want you to grade what I have written as my elevator speech on a scale of ten. So she gave me seven. And then he pointed out what I needed to improve.

-**R33**: Yeah. Yes, it is. It makes sense. (comment after search on Rwanda e-Health services)

-**M1** those comments were more complete than the ones he got from the reviewer actually

-**R12** when you try to make an abstract. Uh, that's the great one, because Google can't do that.

As shown above, the respondents reflect by their own views on some answers by ChatGPT that they think were useful or 'works'. They identified a number of instances where a number of respondents expressed how ChatGPT could be useful to solve certain tasks.

ChatGPT 'doesn't work'. Below, respondents also highlighted instances where they experienced that the Chatbot did not deliver.

-**R14** so it's hard for someone to know to, to dig deep now basing on the, you know, prior experience. But now with the concept, with, you know, with the literature to know to. But to dig deeper into such and such, other than other than relying only on this very, very, very text that is generated.

M1 The problem is, if you know nothing, ChatGPT can be very dangerous if you know a little bit. It could be useful. So, if you ask a question, you always run the risk of ChatGPT giving you an outrageously wrong answer.

M1 Some of the sources I got, I was not able to find those papers afterwards.

Areas were identified where ChatGPT was unable to solve tasks or gave wrong or limited information.

Another aspect was to see if the ChatGPT provided true or untrue and if the answers were relevant.

R27 Well, if it's existing knowledge, then of course, it's ethical responsibility of researchers to find the correct sources and use those as references. If it's a new knowledge which is predicted by ChatGPT, then once again responsibility lies with the researchers to verify that it's valid.

Not true

R24 The biggest issue we run into is this just make stuff up, right? So we have a take an example which is really funny, but it's scary at the same time

The respondents reflected on instances where answers looked credible but were actually wrong and how this can be dangerous for users with limited previous domain knowledge.

On the topic of whether it is ethically acceptable to use this tool

-**R23** It's very, very nice. Tools to support my course. I don't. Worry about the ethical and philosophical matters about this. It's not a new way of life. It's only a technological tool. And what its benefits. It's more and more. Firstly, just do it. This is my opinion.

-**R31** Useful when co-authoring with other people. It's having another colleague doing the writing, if we normally are three, we'll now be four. And if using ChatGPT

for shortening a text, we will still re-view and make sure the rest of us think that it's OK. Then I think it's fine to use ChatGPT for that.

- **R11** If it's only abstract. I think we just acknowledge because the research you need to have more but depend on the the field. At least my field. You need more contribution. Just being someone who helps you to summarize a text, you can use a professional service as well.

R14 It shouldn't replace how we've been doing things. It's an enabler.

not ethically acceptable

-**R25** But it turned out that some students were flagged for having used to generate their answers to to to to critique these articles. This is because the university has a tool called turn it In which can actually detect the consistency or the flow of, let's say, your language somewhere in the text and something that has been artificially generated.

R25 as long as using it for productive purposes and in an honest sense is concerned, I just see it as a tool that will help me improve in the things I do

R12 If ChatGPT helps you in methodology, I think it's helping you and guiding you to do the research. I think it's okay because it's helping you and guiding you, but not if you use it for abstract or for the other content, the part of your research. It's replacing you . I think it's against the ethic.

The respondents had very different views on what is ethically acceptable and what is not and exemplified a wide area of instances for this.

The respondents where elaborating on where the saw possibilities and opportunities

-**M1**: Yes, I thought so. If you're the security manager at a nuclear plant, you need lots of inspiration and ideas.

-**R12** We as the lecturers have to understand more and try to use a ChatGPT in order not to be manipulated by the students

-**R12** It makes me wonder. What? Whether someday it's going to be some ethical shifting for us. For involving in this more flexible so we can use this chatbot more freely without trapped being trapped in ethical discourse for a long time. I think that's the problem is not how to use creativity, but the ethic. If we do really need a how to use it in a very positive way, maybe we should change the the point of view about the ethics or for the don'ts and the do's to be this.

Respondents highlighted that we need to know more and have a better understanding of its potential and that it could give new inspiration and new angles

Challenges / concerns

-**R24** you're going to have AI versus AI because you will not be able to deal with everything. So you have to sort of do a tool chain of and I look at it ChatGPT, I look at it as a better Google, a better spell checker, a better grammar tool. It's just a tool I have would have no issues with using it to write everything I write if it did it better than I do. But by doing so and by everybody doing that, we will write so much stuff that we will drown.

-**R24** there's also ownership. So if you're looking at the resources required to run these models at scale, we're talking about, you know, basically world's richest corporations or individuals. So so we're crowning new kings here, right? And they don't give a damn about regulation. So so, you know, it's like, who are we going to look up to here or who's going to control it?

-**R22** juiz de valor or valid judgment, how the artificial intelligence will delivery this result for you.

-**R31** I think it's just a matter of time before these ChatGPT and lookalikes will be sponsored and you will get the one who has paid the most

-**R32** I also agree that the risk is high, that whoever pays the most is going to have the most exposure

-**R32** And will it lead to more polarized

-**R34** When you go on Google, you will have get the information that you that is similar to what you have already read. So you will get more and more into your own way of thinking or your own political views or whatever it is. Yes. So the society will be more and more polarized.

R31 When applying for research funding, perhaps one can use CHATGPT for ideas and creativity. And that is actually really sad. I read somewhere what kind of world will we be living in if we get to do all the boring work and AI will be taking care of creativity and fun stuff

-**M3** That is a reference it constructs, which means it can find your name and my name. And then because we have something that we've done that is similar to each other and then give an article and say, This was written by me and you, but when we actually didn't write an article

There were concerns that there will be so much text created that we will need the AI to read and interpret the AI and also that the these tools will do the fun work and us humans will be stuck with the boring stuff.

4 Conclusions

4.1 Wrap Up

In this section it is our idea to wrap up and discuss some of the key ideas in this paper. It is clear from the respondents' perspectives in the workshops that there are many areas to where they are excited about the development of AI in general and the possibilities with ChatGPT in specific. Most of the respondents are pleased and excited about what Chat GPT and AI can do for us. For instance, most of the respondents thought it was useful and ethically OK to use ChatGPT as a 'sharp' search engine, get inspiration for a future research chapter or getting peer-review style comments to improve texts. However, there were also concerns that AI will do the creative and fun parts of our work and that it produces false facts.

Following our approach, we can think about two fundamental different views of knowledge in the use of AI:

A-stance- Perspective conscious Knowledge. Knowledge as more or less useful views from stakeholder views - Simi-lar to when we use trip advisor for recommendations for traveling and so on. In this perspective, AI can be really powerful and helpful.

B-stance Perspective unconscious knowledge. Knowledge as facts, often related to Scientific work. In this view of knowledge, AI sometimes fabricates false knowledge that can be dangerous.

Our earlier work on Co-design is closely related to the A-stance (Forsgren, 2006a). Previously, we have been rather critical to the whole AI-movement, as they often used the B-stance of knowledge in their arguments. (Sandewall, 1990).

By A-stance, in this context, we mean using an open approach to new knowledge as useful perspectives implementable in technologies. B-stance, on the other hand, is more restrictive, relying on regulation and control.

When listening to (Brockman, 2023) and (Altman, 2023) on Open AI, we can hear that they are using A-stance arguments. For example, that we all need to try to involve all people and their perspectives in the fostering of coming generations of AI. It makes us a bit confused because we find ourselves inclined to agree.

At the same time, we listen to EU-people talking about AI regulations of different types of AI applications, with little serious reflection on by whom and how the judgements are going to be made. About dangerousness for whom? In Co-design thinking, dangerous for someone, can be the opposite for someone else. A conclusion can be that EU people rely on the B-Stance. From an A-stance, the B-stance perspective, is naive. We realize that there has been a long historical process within the philosophy of knowledge, in this process we think that many people are ready to agree with us taking the A-stance, since they themselves, often say" As I see it" or "In my view".

One possible conclusion of all this is that we, ourselves, have moved from an AI-critical to an AI careful / AI positive position in our thinking with a view that it is good to respect and care about other peoples' views of reality, but also the views of a trained AI.

A wrap up episode. If we apply a Double loop Co-design strategy of knowledge and knowledge production, we put ourselves in a position, similar to a traveler using the trip advisor platform. AI can give the traveler inspiration for new experiences, it can also present judgements from other travelers. But, can we trust AI? We find this question, similar to whether a traveler can trust a judgement on trip advisor. The same event can be completely differently judged, depending on the view of the reviewer.

As an example, a short scenario: With the use of Trip Advisor, one of the researchers, found a perfect spot for a holiday, he took a look at the other travelers' reviews that he found trustworthy, they were all positive. But taking another view, viewing the photos, made him suspicious, as the pool looked different than the view in google maps. he decided to use the google maps virtual man to have walk around the hotel in order to see the pool, but without success. He could only see a large parking area. He therefore asked the hotel for clarifications. The result surprised him as the hotel told him they've built a new pool but forgot to update the photos. They thanked him for making them aware of them and rewarded him with a reduced price.

We find this episode relevant to reactions in our workshops, summarized in the following notes:

We find this episode relevant to reactions in our workshops, summarized in the following notes:

1. AI can be a great tool to inspire and also to help you find and create a travel experience, a text or a picture. The AI sounds sure and confident, but with another view,

sometimes you can see that AI is completely wrong. In other cases, the AI produced a useful view and was a powerful tool.

Perhaps even more importantly, two other aspects:

2. The AI-knowledge logic, relies on feedback from many views, in that way AI (in this case the service in Trip Advisor) can be even more useful to users.

3. The AI statements in the AI-knowledge logic can also inspire the service providers to improve their service offers. The" false" AI-statements can pose the question - "maybe we should develop our service in the direction making the AI-statement true. A researcher found one that the AI gave a non-existent reference. Looking a bit closer the researcher thought - the false reference should be interesting to read.

The conclusions so far have inspired us to write the Double loop Co-design manifesto: We are a liberal initiative, thinking of every person as an important stakeholder in the future of human life. We are also a" co-initiative" thinking that Co-designing the future together, is the way forward.

In the above Double loop Co-design process, earlier knowledge as norms and rules in existing culture, together with existing Technology Ai as an example, are important players in the Co-design process. How we perform, that means the method of Co-design also has to be Meta Co-designed all over again. Us, signing this manifesto, are only early people in an expanding Meta Co-design team.

So, we need people with hopes and visions, manifested in dreams, scenarios, and living labs to participate in the Co-design of our future. An important resource for the Co-design process are dreams, scenarios, living labs/prototypes and other manifestations of knowledge or information technologies, AI as example.

We have a dream that together we can Co-design our future, but then we need to share, decide, implement, and evaluate results with respect to all stakeholder views. To move forward in a friendly and secure environment, making the transformation from dreams to reality.

5 Some notes on the need for further research.

5.1 Further

First it is important to note that in a Co-design approach to science - challenges and problems as well as ideals emerge over time. So in this thinking we can't tell future generations what they should regard as problems in need of research. On the other hand, we can act as human AI - We can have a suggestion and it is up to future generations to judge the value of that suggestion.

Our suggestion is to view human use of smart artificial aids (Aa) as a challenge to approach Double loop Co-Design science.

Here, some hints on why we think the use of Aa will be a future challenge. In the workshops a number of participants hinted on the challenge of Aa-dependence. Aa-dependence in this context can be described as dependence of artificial aids.

Maybe the essence of Aa-dependence can be caught in a few dialogues:

1.

A)”I do not understand why AI should be dangerous for people”

B) ”What would happen if you lost your AI smartphone?”

A) ”I would die - for sure”

B) ”What would happen if AI closed your AI smartphone, and refused to open it again?”

A) ”I would try to force AI to open my smartphone - a life and death battle”.

B) I live so much of my life together with other people via Aa (social media) so I do not know if I should survive without that.

2.

A) It is impossible to teach in schools now as pupils and students just use their Aa to help them answer all the knowledge questions they need to know to, answer questions all the way to pass the exams. Before we regarded this as cheating - but now Aa is implemented in all kinds of portable devices, like glasses and watches. Now we have decided that all kinds of portable devices are accepted in schools.

B) So now you have to rethink what to teach in schools - or?

A) Yes you are right!

B) ”Do not forget that Aa is a technical system. What type of knowledge can humans answer better than technical systems?

C) A)”I don’t know, maybe we need another concept of knowledge in schools. In all kinds of human collaborative activities, like business, to be a good and trustful person is the most important skill to have. Why don’t we teach people to be good and trustful in schools?”

3.

A) ”I help my clients so they can have a better life, Inspire them to dream about a better life, then I help them to reach that. They become a bit unhappy when they see an option of a better life, but then when I help them, they become Happy. They pay me and says that they can’t live without my advice. I am happy about that.

B) ”You have made them dependent on you”

A) Yes that is the best way to earn money as a consultant, ask any successful consultant.”

4.

A) ”Why worry about helpless dependence when there is so much pain and misery in the world that can be reduced with Aa”

B) ”Maybe you have a point”

Ending this series of dialogues, we just want to refer to a common dialogue

A) ”I absolutely agree that the use of computer systems is dangerous because it make humans helplessly dependent.

That’s why I never use computers, but I really like and use my smartphone a lot”.

B) ”But…?”

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