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The Societal Effects of GenAI

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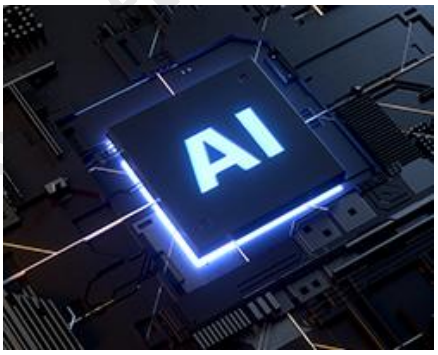

In the last year, it has become clear that GenAI will have dramatic impacts on society. While having tremendous productivity benefits, these impacts are coming so fast, are so broad and so deep that they can produce difficulties. A taxonomy of these effects helps to clarify the situation. With this clarity, it can be seen that the GenAI effects are taking us into a difficult period of adjustment. The challenge is to maximize the productivity benefits GenAI is bringing while minimizing the difficulties in the transition.

If the period of adjustment is not well handled, chaos can result. One way to meet this challenge is to enlist the scientists and engineers who are creating the technology to help build a positive vision of the transformed society. A vision that we can work towards. A vehicle that could help with this a Union of Concerned AI Scientists and Engineers. The following section focuses on the taxonomy and its implications, which are the motivation for an effort rather than a description of how such an effort might be organized.

Taxonomy

Then a particular area appears amorphous and confusing, it can be helpful to divide it up into its constituent parts. Each part can then be considered separately. Then, in combination. This division into component parts only focuses on the parameters of interest. It does not seek to cover all aspects. Within the parameters of interest, it does try to be complete.

The periodic table of elements is a good example of another taxonomy. It provides a useful breakdown of types of matter. It does not reflect all characteristics of matter. For example, it does not consider all types of sub-atomic particles (see figure 1 on next page).

The taxonomy of concerning societal effects is graphically represented in the Illustration. It does not address the dramatic productivity benefits of AI. Also, in some cases, the concerning societal effects are a result of our current inability to figure out how to take advantage of these benefits in some domains. It is a representation of the concerning societal effects as they are known today. As we gain more experience with GenAI, others may become visible. Also shown are representative aspects of each effect along with likely implications for society as a whole. Below, each portion of the taxonomy is discussed.

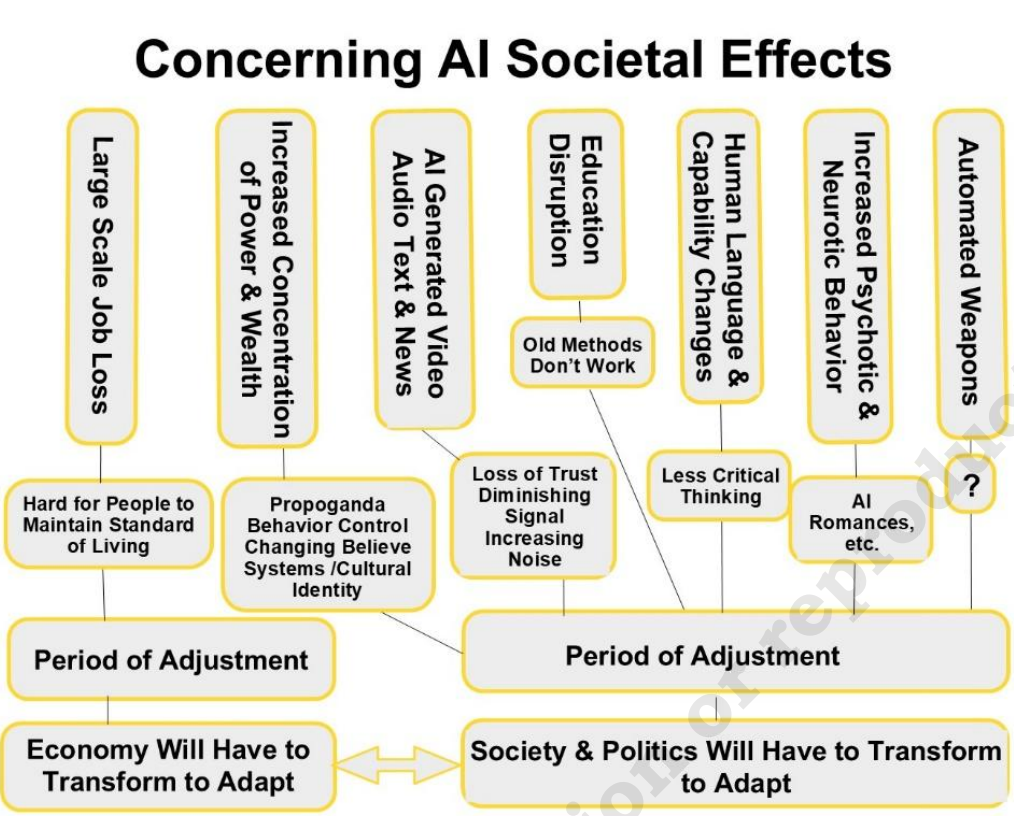

Figure 1 Taxonomy of the social impacts of Gen AI
click to enlarge

Job Loss

GenAI's broad-based productivity gains offer tremendous benefits, while at the same time creating very large potential job losses. What is particularly concerning is that these job losses appear to be fundamentally different than those from previous generations of automation. In those previous generations, lower-skilled jobs were automated. This allowed people to move up to higher skill jobs, and the number of higher skill jobs increased. AI, coupled with robotics, is automating both low-skilled and high-skilled jobs. For example, Waymo in San Francisco now has a higher market share than either Uber or Lyft. At the same time, AI code generation is making it difficult for Computer Science graduates to find jobs. Estimates have been as high as **80% of jobs being replaced** by AI. Recent statements by several CEOs make these large numbers seem eventually plausible. Starting with the IndustrialRevolution, developed societies' economic systems have been based on jobs. An individual has an acceptable standard of living based on having a job. It is unclear how people will maintain their standard of living when so many jobs disappear.

Concentration of Power and Wealth

Those same productivity gains will result in increased concentration of power and wealth. Wealth will be driven by those who capture a significant piece of the productivity increase. This is why there is such a mad rush in the GenAI industry. Friends have likened it to the arms race during the Cold War. With Meta offering $100M signing bonuses to AI scientists and engineers, it is clear how wealth will continue to concentrate.

Power comes from being able to manipulate the outputs of GenAI systems to conform to one person's particular opinions and beliefs. Elon Musk's experience with **controlling xAI's chatbot's output** to conform to his outlook is instructive here.

As more and more people get their information from GenAI systems, those who control the systems have growing power to influence how people see the world and themselves in it. This has implications for political systems as well as other institutions in society.

AI Generated Audio, Video, Photo, Text, News

AI-generated video, audio, photos, text, and news are lowering barriers to entry for content creators while at the same time disrupting existing ways of determining truth and undermining trust in society's institutions.

While some are creating new fiction, others are trying to rewrite truth. The use of AI-generated video and still photographs purportedly showing real events is growing. The extent of the problem is indicated by the fact that once trustworthy **government entities are now releasing faked material** as if it were ground truth. Some institutions are taking this to the next step. **Legally defending the right to disseminate false news** as real and attempting to prevent fact-checking.

Even without legal protections, those who control AI systems and the way they create these false views of reality have growing power. At the same time, diminishing trust - trust in institutions, political leaders, and other individuals.

Artists are beginning to face the challenge of AI-generated art. More than 50% of content on music streaming services and social media is now AI-generated. The economics of AI-generated art give it an advantage over human-created work, having an impact similar to the business job loss through automation.

On the other hand, there was a time when photography was predicted to spell the end of painting. It didn't. Instead, they created a new additional art form. Will a GenAI art form appear that complements the existing ones? Or will only art forms that can not be duplicated by GenAI and 3d printing be the only human-created forms to survive?

Some complain of 'AI generated slop' filling the web. This is not so much a result of the technology. Rather, the economic structures put in place by the websites that reward 'click bait', low-cost content, etc.

So far, every attempt to develop technology to detect AI-generated content has failed. Some think they can tell the difference. But really, what they are detecting is the economic incentives put in place by the websites.

Education

Potential productivity increases in education are coming with disruptions in how our educational systems work. Many see great promise for AI in education. Unfortunately, exactly how to do that is not currently clear. This is happening at all levels and segments of education. Existing methods are being disrupted. Also, it is increasingly difficult for educational institutions to prepare students for a future as the outlines of that future blur.

Human Language and Capability Changes

Because LLMs predict the highest probability next word, over time, there is the potential that only the most widely used words will be used. Thus, creating a shrinking vocabulary. There is concern in some quarters that the use of AI to do critical thinking for people can result in a shrinking ability to do critical thinking. In the past, the deployment of calculators and later GPS Navigation systems has been seen to have decreased the average sizes of related human brain areas. Some expect the areas used for critical thinking to go through a similar shrinkage. A similar thing canhappen with creative thinking. It is too early for

definitive research in this area. However, there are a number of early studies that point in this direction.

In the past, in both creative and critical areas (including Computer Science related), the work normally done by entry-level people gives those people the experience necessary to become senior. Now, those jobs are the first to be taken over by AI. The concern is that as senior people retire, there will be no people coming up to take their place. Some argue that this is not a problem. Not a problem because by then, AI will have taken the senior jobs too.

Increased Psychotic and Neurotic Behavior

There are increasing reports of people falling into romantic or religious relationships with AI systems. Also, there has been a lot of work on making AI systems, particularly chatbots, tailor their responses to the particular user. This has the potential to amplify pre-existing tendencies in neurotic or psychotic behavior.

Autonomous Weapons

Finally, AI autonomous weapons have the potential to change in unpredictable ways how armies, police forces, and individuals operate in conflict situations. There is information leaking out of Ukraine indicating that autonomous weapons are already appearing on the battlefield there. How this plays out in the geopolitical domain with nation states, rogue nations, non-governmental organizations, terrorist groups, and individuals is unclear at this point. Similarly, the impact on policing, criminal activity, civil liberties, etc., is also unclear. However, the experience with criminal cybersecurity activity indicates that the criminals are likely to be early adopters.

Period of Adjustment Challenge - Avoiding Chaos

The brief overview of the societal effects above indicates the seriousness of the adjustment challenge. If the adjustment period is not well handled, it can lead to chaos - very destructive chaos. The best way to maximize the benefits of GenAI while minimizing its downsides is to develop a clear image of what society will look like on the other side of the period of adjustment. If people have that image to work towards, it will make the difficulties encountered on the way there bearable. Without such an image, it is easy for people to fall into despair. Then, to act out from this despair in a destructive fashion.

The economic challenges of large-scale job loss may appear to be the most compelling. Looking at them, it is clear that a different economic structure will be needed. Some have proposed **a universal basic income**. There may be other effective alternatives.

Similarly, the other parts of the taxonomy challenge other keystone institutions of society. These will be forced to adapt too but each of these are not happening separately. They are all interrelated and facing challenges at the same time. There may be other practical alternatives.

Similarly, the other parts of the taxonomy challenge other keystone institutions of society. These will be forced to adapt, too. But each of these is not happening separately. They are all interrelated and facing challenges at the same time. Their interaction makes the challenges even greater.

What is clear is that finding a way through these challenges needs serious work now.

The people who best understand the technology (and what it can do) are those creating the frontier LLMs and their applications. Unfortunately, the companies that employ these people see the company in a race that allows for no time to stop and think about consequences.

This means that some way external to the company needs to be found where these people can engage. There is an **organization example** that comes from the Cold War arms race, where the scientists and engineers who were developing the weapons came together as individuals to work on managing the society-wide effects. Something similar is needed for AI. Maybe it could be called a Union of Concerned AI Scientists and Engineers.

Conclusion

The taxonomy gives us an overview framework of the dramatic impacts on society. While having tremendous productivity benefits, these impacts are so broad and deep that they are taking us into a difficult period of adjustment. If the period of adjustment is not well handled, chaos can result. One way to meet this challenge is to enlist the scientists and engineers who are creating the technology to help build a positive vision of the transformed society. A vision that we can work towards. Something that might help with this would be the creation of a Union of Concerned AI Scientists and Engineers.