

TZVETAN TODOROV'S CRITIQUE OF SCIENTISM – ECHOES FOR AI IN RESEARCH AND EDUCATION

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Abstract. This paper explores Tzvetan Todorov's humanistic critique of scientism as a framework for evaluating the ethical and social implications of modern technological developments, particularly AI-powered tools such as ChatGPT. While Todorov valued scientific progress, he warned against reductionism, dehumanization, and the overextension of scientific reasoning into moral and cultural domains. These concerns resonate strongly today as generative AI reshapes research, publishing, and education. The paper examines both the potential benefits of Large Language Models – such as accessibility, language support, and efficiency – and their risks, including inaccuracy, bias, authorship violations, and ethical ambiguities. It reviews institutional responses, notably COPE guidelines, and calls for transparent, responsible, and regulated use of AI in academia. Ultimately, the study advocates a human-centered approach to technology that aligns with Todorov's emphasis on dignity, moral reflection, and the preservation of human creativity and accountability in the age of artificial intelligence.

Keywords: Tzvetan Todorov; scientism; artificial intelligence; ChatGPT; academic ethics; humanism

1. Introduction

While Tzvetan Todorov did not directly address technology, his emphasis on humanism, ethics, and the preservation of human dignity provides a framework for critically examining technology's impact on human beings. Today, he would likely advocate for a responsible, ethical approach to technological development, one that prioritizes human well-being and cultural integrity over efficiency or profit.

Recent technologies reflect a philosophical trend in viewing modernity that Todorov calls 'scientism' – one of the four major tendencies, or 'families' (Todorov, 2002), which is the belief that science is the ultimate or exclusive path to knowledge and that scientific methods should be applied to all areas of life, including those traditionally considered outside the realm of science, such as ethics, aesthetics, and politics. While respecting science and its contributions, he was wary of the expansion of scientific

thought into areas that, in his view, should be guided by other forms of reasoning, such as moral or humanistic considerations.

Some key Ideas in Todorov's critique of scientism are:

Reductionism: Todorov criticized the reductionist tendency in scientism, which tries to explain all aspects of human experience solely in terms of science, often ignoring the complexity of human emotions, culture, and moral values. He believed that such a worldview simplifies the richness of human life, reducing it to mere data points or biological processes.

Dehumanization: One of Todorov's main concerns was the dehumanizing effect of scientism. When scientific reasoning is applied indiscriminately to all aspects of life, it risks treating human beings as objects rather than subjects with intrinsic dignity. For Todorov, this approach strips away the unique qualities that make us human, such as our capacity for love, creativity, and ethical reflection.

Ethics and Morality: Todorov argued that scientism cannot adequately address questions of ethics and morality. He believed that moral decisions involve values and judgments that are not reducible to empirical data or scientific reasoning. For instance, while science can inform us about the consequences of certain actions, it cannot tell us what is morally right or wrong. Todorov insisted that ethical reasoning requires a different kind of deliberation, one that includes empathy, cultural understanding, and humanistic values.

Limits of Science: Todorov acknowledged the power of science in explaining the natural world and improving human life, but he emphasized that science has its limits. He believed that some aspects of human existence – such as the search for meaning, the experience of beauty, or the nature of justice – are beyond the reach of scientific inquiry. Todorov saw the overextension of scientific methods into these areas as problematic and misguided.

Totalitarian Implications: Todorov also associated scientism with certain forms of totalitarian thinking. He observed that when science is treated as the sole source of truth, it can lead to authoritarianism, where those who control scientific knowledge also claim the right to control society. This was a concern Todorov addressed in his analysis of 20th-century ideologies, where the misuse of science often justified oppressive regimes.

To sum up, Tsvetan Todorov's critique of scientific thought is rooted in his commitment to humanism. He valued science but rejected the notion that it could answer all of life's questions. For Todorov, the human experience encompasses dimensions that science alone cannot address, such as ethics, culture, and the quest for meaning. He argued for a balanced approach in which science is respected for what it can achieve, while humanistic and ethical considerations remain central to guiding human actions and decisions.

A major technological development that makes us look back at Todorov's concerns about the negative impact of scientism on the human view of knowledge

creation and dissemination is the launch of ChatGPT in November 2022, followed by similar AI-powered text-generation tools. This has provoked controversial discussions among scholars and practitioners from all walks of life and all over the world, resulting in an unprecedented and continuously rising number of publications ever since. The new advancements in natural language processing and their enormous capabilities to produce human-like texts, images, algorithms, etc., have been, however, received with different degrees of enthusiasm, ranging from total rejection to passionate acceptance.

The fields of education and research felt especially affected by these extremely powerful digital tools which, at their onset, caught academics unprepared and caused a chaos both in dealing with the issue through university policies and in the possibilities of using ChatGPT in scholarly publications.

The aim of the paper is therefore to summarize the various views on the employment of AI-powered tools in teaching and research in order to contribute to a consistent approach and a consensus on how they should be treated by universities, research institutions and publishers, since it is apparent that the further development of AI is unstoppable and any attempts at banning it will clearly remain futile.

For research and publishing it is of vital importance to decide on matters such as authorship and responsibility, retaining human control over content, accountability, fact-checking, and many others. In this respect it will be argued that strong reliance and/or misuse of these tools may lead to a very serious social impact, reaching from the destruction of the fragile social order to disastrous effects on human health, for instance, in the life sciences and medicine. Hence, strict regulations are absolutely necessary to be created, allowing, however for the benefits of the tools to remain at scholars' and educators' disposal.

2. LLM and AI-driven tools in research

There seems to be general agreement that Large Language Models (henceforth LLMs) and generative AI tools can be useful in research for: overall orientation in a given topic, especially when it is new to the researcher; generating preliminary ideas about the structure; summarizing, paraphrasing, language polishing; data processing (limited); translation (limited) (Lingard, 2023, Grimaldi & Ehrler, 2023, among others). These features can be especially helpful for students and young scholars, as well as for non-native speakers mostly of English, who feel insecure about their language skills.

On the other hand, LLMs and generative AI tools still demonstrate a number of weaknesses (Lingard, 2023, van Dis et al., 2023, Xames & Shefa, 2023, Grimaldi & Ehrler 2023, Garcia & Gasser, 2021, among many others), such as:

- Lack of accuracy and hallucinations – data, references, facts, etc. may be inaccurate or invented by the system.

– Lack of contextual understanding – the system is capable of creating meaningful immediate context (also called co-text), that is, cohesion and coherence among sentences and paragraphs, but cannot identify the overall context of situation in which specific information is being searched for.

– Lack of objectivity – for the time being, due to the primarily one-sided data the system feeds on (in English), the results often reflect certain ethical and moral beliefs typical of the cultures using the language. This may lead to biased information that clashes with the researcher’s own cultural, religious, etc. values, or could be simply misleading.

– Limitations of training data – as mentioned above, the data is limited in terms of language, especially in the case of so-called low resource languages (with little representation on the internet).

– Potential for plagiarism – the system draws on existing data/texts, some of which may be copyright-protected or belong to specific author(s), which is not appropriately acknowledged.

– Danger of violation of personal data protection regulations – considered as one of the most high-risk consequences.

– Breach of requirements for authorship – including plagiarism, lack of author responsibility and accountability for the resulting content, as well as other issues discussed in more detail in the next part.

Therefore, scholars need to be trained on how to make use of the new technology in a constructive, but also ethical and responsible way, being aware of both the benefits and the drawbacks it involves.

3. LLM and AI-driven tools in publishing

At present, most of the major publishers, and not only they, state that they adhere to the COPE (Committee on Publication Ethics) recommendations on “Authoring and AI Tools”, where the main points can be briefly summarized as:

– AI tools cannot be listed as authors: authorship is construed around accountability for the ideas that are put forth; authors are responsible for ensuring their work does not infringe on third-party rights.

– The use of AI-powered tools should be transparent and thus acknowledged appropriately as the work is submitted to the publisher.

– Reviewers should not upload manuscripts into ChatGPT as it infringes on issues such as copyright, personal data and confidentiality (COPE 2023).

At the same time, the top 10 Largest Academic Publishers in 2022 point out the following issues with AI-powered tools on their websites (in a summary):

– Authorship and responsibility.

– Retaining human control over content; accountability; fact-checking.

– ChatGPT polluting peer reviewing.

– Enhancement of hyper-productivity, resulting in low quality.

– AI tools are considered non-legal entities and, therefore, cannot assert the presence or absence of conflicts of interest nor manage copyright and license agreements.

All these 10 publishers adhere to the position taken by the Committee on Publication Ethics (COPE).

Meanwhile, a number of articles have appeared addressing various aspects of the use of AI in academic publications. They vary between attempts to use ChatGPT as a co-author, where significant questions are raised related to the concepts of “originality”, “authorship”, “plagiarism” (Frye, 2022), and complete denial: “high-tech plagiarism” and “a way to avoid learning” (Chomsky on EduKitchen, 2023). We will not dwell on this question in detail here, since the topic is vast, continually evolving, and in the process of refinement.

As for the policies of publishing houses and individual journals in Bulgaria, 196 publications appear in the “List of modern Bulgarian scientific publications, referenced and indexed in world-renowned scientific information databases” of NACID, where about half of them have ceased to be referenced to date. Exact statistics are not possible, as most of the publications do not offer electronic access, but a general overview shows that a very small number have a special section “Ethics”, where it is usually stated that the publisher adheres to the guidelines of the Committee on Publication Ethics (COPE). There is no mention of rules for using AI tools anywhere.

4. LLM and AI-driven tools in education

4.1. ChatGPT's self-assessment

To test ChatGPT's capabilities for self-assessment, the following question was posed to the chatbot: “What are the advantages and disadvantages in using you in higher education?” Here is the resulting text:

“Using AI like me in higher education has various advantages and disadvantages:

Advantages

1. Personalized Learning:

– I can provide tailored learning experiences, adapting to individual students' needs and pace.

– Students can receive immediate feedback and explanations, helping them understand complex topics more effectively.

2. Accessibility:

– I am available 24/7, making learning resources accessible at any time, which is especially beneficial for students with diverse schedules or time zones.

– I can assist students with disabilities by providing content in various formats (text, audio).

3. Supplementary Support:

– I can offer additional explanations, examples, and resources to complement classroom instruction.

– I can assist with exam preparation by generating practice questions and quizzes.

4. Administrative Assistance:

– I can help faculty with grading, scheduling, and other administrative tasks, allowing them to focus more on teaching and research.

5. Language Support:

– I can help non-native speakers with language translation and improving their language skills.

Disadvantages

1. Lack of Human Interaction:

– I cannot fully replicate the nuances of human interaction and the emotional support that teachers provide.

– Over-reliance on AI might reduce opportunities for students to develop interpersonal and communication skills.

2. Quality and Accuracy:

– While I strive to provide accurate and relevant information, there is always a possibility of errors or outdated information.

– Critical thinking and the ability to discern reliable sources are crucial, as I might not always provide the context necessary for deeper understanding.

3. Dependence and Engagement:

– Students might become too dependent on AI for answers, reducing their ability to think independently and critically.

– Engagement can suffer if students find interactions with AI less motivating compared to human teachers.

4. Privacy and Data Security:

– The use of AI involves data collection, raising concerns about privacy and data security.

– Institutions need to ensure that student data is protected and used ethically.

5. Equity and Access:

– Not all students may have equal access to the technology required to use AI effectively, potentially exacerbating educational inequalities.

6. Job Displacement:

– There are concerns about AI replacing certain teaching and administrative roles, leading to job loss and changes in the educational workforce.

Conclusion

While AI offers significant benefits in enhancing and personalizing education, it is essential to balance its use with human interaction and oversight. Ensuring equitable access, maintaining data security, and fostering critical thinking are key to integrating AI effectively in higher education”.

Overall, it seems that ChatGPT covers the most important strengths and weaknesses of its use in higher education. Therefore, some recommendations

emerge for practitioners – both teachers and students – to guarantee the successful implementation of LLMs and generative AI models in the educational process.

4.2. Recommendations

The most basic necessity is to ensure that both students and faculty are digitally literate, where ‘digital literacy’ is understood as:

Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy. (UNESCO, 2018)

In this regard, it has to be noted here that there seems to be a widespread assumption that the young generation was ‘born’ digitally literate, while research demonstrates that this is hardly the case when it comes to working with information for academic purposes (Breuer, Chankova, Vassileva, 2020). These results were obtained before the launch of ChatGPT, whose free use additionally obfuscates the picture. For instance, while until recently teachers and researchers had to fight plagiarism from the internet, now they are confronted with a much more difficult task – to distinguish between human and machine-produced texts and make decisions concerning students’ and scholars’ assessment. With time, this task appears to become even more complicated, almost bordering on the impossible, due to the extremely fast and sophisticated development of the technology.

Inevitably, the processes described above have led to considerations about exploring and applying alternative assessment methods away from the widely used production of texts such as: oral examinations, written tasks to be completed in class, project work, practical task-based work, etc.

Another suggestion is to explore the practical use of LLMs as a supplement to discussions, as well as for problem-solving and critical thinking tasks. Characteristic features that can be starting points for such explorations are, among others, that the systems tend to generate different texts to the same prompt, to create non-existent references, to hallucinate. These can be used to provoke students to compare, search for and find relevant and reliable information, manage and evaluate it appropriately.

Without going into further details here, it is also vital to elaborate transparent principles for ethical use of LLMs, making students fully aware of the fair and moral issues related to the employment of the technology.

5. Conclusion and current uncertainties

Regarding research and publishing, strict regulations are absolutely necessary to be created so as to avoid breaches of academic ethics of all kinds discussed above. Among other issues, such regulations will prevent the proliferation of (pseudo) academic publications which may lead to feeding AI systems with their own production and thus result in sheer impossibility to distinguish between machine

and human creation. This is closely related to the current practices of assessment of scholars' achievements, be it for the purpose of promotion or access to funding, where it is suggested that: "We have to go back and look at what the reward system is in academia," says computer scientist Debora Weber-Wulff. What might be needed is a shift from a 'publish or perish' culture to a system that prioritizes quality over quantity". (Nature, 28 February 2024). Along these lines, I would also dare to advocate the view that the various citation indices need serious reconsideration of their algorithms since their results are purely quantitative and do not cater for the quality of citations. Besides, the companies providing the indices are entirely commercial and it is no wonder that a petition entitled "Stop Tracking Science"¹ has been launched and signed by thousands of scholars. For instance, the University of Zurich has withdrawn from the university ranking published by the Times Higher Education magazine with the motive that the ranking creates false incentives.

Another disturbing fact made public recently is that large "academic publishers are selling access to research papers to technology firms to train artificial-intelligence (AI) models" (Gibney, 2024), among them Taylor & Francis and Wiley, which inevitably provokes scholars' dismay regarding copyrighted work, as this is happening without their knowledge or consent. Leading publishers thus seem to contradict their own policies regarding the use of AI-powered tools (discussed above) by fueling these same tools with huge amounts of human-produced data. The ethical issues arising from such developments are more than obvious – financial profit has (again) gained the upper hand over fair, morally sustainable distribution of knowledge.

In terms of education, policymakers should not ignore or police the use of AI-powered tools but rather prepare a generation of students who are fully equipped with the knowledge and skills to employ them conscientiously, respecting authority and adhering to ethical and moral standards. Challenging as it may be, it is mandatory for universities to achieve this goal in view of their students' future realization as competent professionals, ready to function adequately in a transforming labour market and to resolve the uncertainties of modern social integration.

Therefore, I would concur with Eaton (2021) who believes that: "Human activity is enhanced, not threatened by artificial intelligence. [...] Humans may even be inspired by artificial intelligence, but our ability to imagine, inspire, and create remains boundless and inexhaustible." This standpoint corresponds to the humanistic values Tzvetan Todorov advocates more than ever before.

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NOTES

1. <https://stoptrackingscience.eu/>.

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