Editorial

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Hybrid Universities at Risk: Human Expertise in the Age of AI Supercomputing and Quantum "Cognition"

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Introduction

The advent of the "hybrid university" stands out as one of the most significant advancements in knowledge generation mechanisms since it combines the cognitive capacities of humans, institutions, and machines in one coherent entity [1]. The model is fundamentally sound as it takes advantage of how artificial intelligence, supercomputing, and quantum computing can increase cognitive potential far beyond the natural abilities of any single human being [2,3]. Yet, while allowing such enhancement, it faces the danger of gradually losing its cognitive sovereignty in favor of machine computation. The danger lies not in the adoption of technology but rather in preserving human intellectual independence amid increasingly sophisticated algorithms.

Vulnerabilities

One of the key threats to the hybrid knowledge system is inherent to education. The usage of large language models blurs the line between artificially generated knowledge and true cognition, leading to situations where written essays and other assignments cannot serve as indicators of learning anymore. Already existing evidence suggests that unmonitored usage of generative AI tools is capable of negatively impacting the outcomes of education and limiting deep understanding [4,5]. The suggested move away from current approaches toward oral evaluations, blue books, and milestone-based interrogations is not a step backward but an important shift towards restoring epistemic integrity. Another challenge emerges from the growing gap between processing capabilities of machines and human ability to comprehend information. With the advent of Artificial Intelligence (AI) supercomputers and especially quantum computing systems, it becomes likely that decisions will be made by algorithms that work far above human-level of abstraction [2]. The issue brings up a problem of interpretability: in such cases, it will be difficult for humans to understand how a certain decision or discovery was reached. In such scenarios, a system of Human-In-The-Loop (HITL) must move away from its current form and become a part of a continuous monitoring framework that allows for real-time interpretability, anomaly detection, and human validation of algorithmic outputs before decisions are made [6].

Finally, another danger is connected with the rapidity with which new knowledge is generated and spread via networked AI systems. Indeed, in the course of their operations, such systems will be able to create and spread new information at an incredible speed far greater than that with which people can process that information. Hence the emergence of knowledge dissemination before people become capable of processing it on a conscious level. As the solution, I suggest isolating computational nodes from each other and requiring human authorization prior to spreading any information, which seems to make much sense strategically speaking. This will provide necessary time for knowledge validation and contextualization. Of course, the necessity for partial autonomy of AI systems as justified by the problem of the inability to conduct real-time supervision due to latency of communications in the case of outer space exploration, etc., is legitimate as well. At the same time, this reason should not be used to legitimize autonomy of any kind of systems within earthly environments, including educational and research setting.

Apart from these Stated Concerns, there are also a Number of Additional Risks that need to be Considered

a) Mental Deterioration: Continued reliance on the use of AI for decision-making may impair the capacity for critical thinking, memory retention, and problem solving akin to the skill atrophy caused by automation in other sectors [7].

b) Conformity of Knowledge: AI systems fed into similar information may tend to produce similar results, thereby leading to conformity and a lack of fresh insights.

c) Implicit Algorithmic Authority: Students and researchers relying heavily on algorithmically generated conclusions are likely to compromise the principles of scientific inquiry.

d) Ethical Relativism: The sharing of responsibility between humans and machines may make it difficult to assign accountability [8].

Corresponding Approaches to these Solutions, Extending the Aforementioned Framework:

a. Compulsory Cognitive Testing: Frequent face-to-face, spontaneous tests to confirm autonomous cognitive abilities.

b. Explainable AI Requirement: All critical AI outputs require explanation of the cognitive path taken by AI for human review.

c. Distributed Governance Structures: Oversight committees composed of individuals with knowledge of technology, ethics, and the relevant disciplines for monitoring AI implementation.

d. Pedagogic Shifts: Educating learners on using AI but also questioning and evaluating its use as an epistemological agent.

e. Latency Mechanisms in Knowledge Sharing: Instituting delays and review stages prior to widespread dissemination of AI-derived information.

Conclusion

On reflection, the hybrid university must be wary of its own technological capabilities and avoid the trap of conflating computation with intellectual development. The role of the university, in essence, has always been to convert information into comprehension and comprehension into wisdom [1]. This conversion is fundamentally a human task; it demands discernment, situational awareness, ethics, and critical reflection upon basic premises. While artificial intelligence, supercomputers, and quantum technology may aid in this endeavor—they cannot fulfill this responsibility without radically redefining the very concept of knowledge itself. Consequently, the future of the hybrid university lies in a paradoxical balance between ever-increasing technological sophistication and deliberate humanness. It follows that the conservation of expertise must not be a passive byproduct but a deliberate design choice of the new system.

Ethics Approval and Consent to Participate

Not applicable.

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Declaration of AI and AI-Assisted Technology in the Writing Process

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