

“Science Integrity in the Age of AI”, Helga Nowotny

Main perspectives: While some spectacular achievements of AI in science –like AlphaFold developed by Alphabet’s DeepMind to predict protein structure – conveyed to society the power of AI in solving scientific problems – it has been used in science since a long time. The automation of daily tasks and entire labs, the use of Agentic AI in setting up interdisciplinary teams, data-driven measurement devices and much more has led to an acceleration of science. AI has enabled the exploration of discoveries while changing profoundly how science is organized. An already dysfunctional publication system, a peer-review system stretched to the limits and a dramatic increase in applications for funding add to the challenges in safeguarding scientific integrity and the *ethos* of doing ‘good science’. One scientific discipline fully exposed to the impact of AI is mathematics. The Leiden Declaration on AI and Mathematics of June 2026 provides an accurate analysis of what is needed to safeguard the values of science and its integrity. Its message and recommendations are exemplary:
<https://leidendeclaration.ai>

Discussion and ideas: Participants agreed that we must learn how to live with AI as a helpful tool to benefit science and scientists. But it is dangerously easy to be seduced by the speed and smoothness of AI to provide answers. This may result in overreliance on AI by providing ‘false expertise’ when it enables to do things one does not understand and for which one cannot be accountable. Instead, critical thinking must prevail and be taught to students. Teaching figured prominently in the discussion. Universities were viewed as reacting largely in a helpless, and so far, also hapless way, when facing the disruption ahead. The humanities are particularly unprepared and often naïve. Attention was also drawn to the uneven access to LLMs for students from less favorable socio-economic backgrounds, widening existing inequalities. Coping with the turbulence caused by AI for established ways of teaching needs new solutions, e.g. incorporating AI into curricula; creating dedicated spaces at universities, professional meetings and conferences to share experience and engage in discussion. A particular vulnerability is the training of graduate students when AI takes over tasks previously done by them. This valuable way of becoming initiated into doing science, including the norms of scientific integrity, will no longer exist.

Another field discussed extensively was the already highly problematic field of publication with the dominance of ‘vanity journals’ and the increasing difficulty, if not impossibility, to distinguish between good scientific papers and mere slop. Young scientists especially lack guidelines while being exposed to mounting pressure to publish while AI renders control of errors and accountability of authors more difficult.

Conclusion: Participants acknowledged the benefits derived from using AI in science and the many exciting prospects it offers. They identified the main threats AI poses to scientific integrity but were adamant that it is not due to AI alone. Rather, scientific institutions - universities and research organizations, funding agencies, the publishing industry and the peer-review system – are challenged by AI to reinvent the organization of science, if science and scientists are to flourish and work for the public good also in the future.

