



Reija Haapanen

## In the era of generative AI

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First, I would like to introduce myself, the Managing Editor of *Silva Fennica* since February. Some of you have already been in contact with me regarding technical issues in the publishing process. Regarding scientific discipline, my doctoral degree is in Forest Resource Science and Technology, more specifically remote sensing-aided forest inventory, but I also have experience from forest statistics from the latest FAO Global Forest Resources Assessment (FRA), as well as environmental and tax statistics from Statistics Finland.

In this post, I follow Dr. Pekka Nygren after his long and productive period as Managing Editor. It is occurring to me piece by piece what excellent work Pekka and the editorial staff at our office together with the Editors-in-Chief and Subject Editors have done in developing the journal. Great technical and policy-related changes have been carried out on Pekka's watch. On behalf of the publisher, Finnish Society of Forest Science, and the editorial colleagues, I pay a warm tribute to Pekka on his successful service!

### Now we are facing new challenges

One of my own interests lies in the rise of generative artificial intelligence (AI) and its effects on scientific writing and science per se. Whereas it can be seen to help in literature searches, data analysis especially via aiding in coding, or improving the communication of results, I belong to those who don't see the increasing reliance on generative AI as positive development. There are several reasons of which I'll present the most important ones in the following paragraphs.

While generative AI could be used in almost all stages of scientific process – starting from formulating research questions and concepts – one typical use, accepted also by *Silva Fennica*, is to help in writing of the manuscript. However, writing includes editing, condensing and especially clarifying one's points, which all are elements in the scientific thought process and one's development as a scientist. Furthermore, the probability-based large language model (the core engine behind generative AI) does not understand the text it is 'editing' and it is not capable of picking the ideas that are worth tending and expanding. While the result may be plausible and reads well, important details may be missing or biased, and nuances lacking. And the human-like output provided by the model is based on exploiting the creative work of all of us. Thus generative AI should be used with caution also for this seemingly innocent purpose.

Using generative AI for a literature review is also a slippery slope. If used to search for literature, the AI is restricted to the texts available for it and it can also give biased, erroneous or even made-up results. If used to summarise articles, the same cautions as using it as a writing assistant apply (there is no brain at work) and, maybe worst of all, the researcher does not ingest the texts. If one wants to take part in scientific debates, which are part of scientific development, there is now a void where a wisdom gained through reading literature should be.

The same is true with planning one's analyses: it is the trial and error, reading, discussing, learning from colleagues that help the scientist to understand the field. And needless to say, running the analyses via generative AI's black box is something that should have extra strong justifications. When using generative AI just to help in coding, I would like everyone to give a second for the thought: whose work am I exploiting here. The reality is that like the human-like wording, the code also comes from human-created works, often protected by intellectual property rights and for sure, moral rights. The attribution is just lost in the training process!

Silva Fennica has been promoting the fine idea of Everyone's Right to Forest Science in the form of openly available articles since 1998 and started gradually to apply the Transparency and Openness Promotion Guidelines of the Center for Open Science in 2021. As the latest step, openness of research data and codes has been required since the beginning of 2024. The rise of generative AI is, unfortunately, partly undermining the policy. It was not meant that these data would become a prey in the form of training data for large language models of gigantic private corporations.

Should one want to pass these concerns, there is still one more connected to intellectual property rights: if generative AI is used, what is the limit where the work still belongs to you?

Problems may also arise if the guidance of a research organisation is less strict than the guidance of the scientific journal to which the article is submitted.

## **Our instructions need clarifications**

The author instructions of Silva Fennica presently state:

“Generative artificial intelligence (AI) tools may be used as a part of data analysis or as a part of writing the manuscript. When using AI tools in data analysis, such use must be described in the Materials and Methods section with sufficient detail to enable comprehension and replication.

When you use generative AI tools or related technologies in writing the manuscript, the following instructions should be followed:

- You should only use these technologies to improve readability and language.
- Artificial intelligence must be used in careful human control.
- Artificial intelligence and AI-assisted technologies should not be listed as an author or a co-author or be cited as an author. Authorship implies responsibilities and tasks that can only be attributed to and performed by humans.
- Please note that regardless of using AI in the writing process, the authors are ultimately responsible and accountable for the contents of the work.”

It is further required that the authors describe the tools used, why they were used and how. Nothing is said of using generative AI in the planning of the study or literature review. Nor are there any instructions for reviewers.

I have for several years followed a large group named ‘Reviewer 2 must be stopped’ in Facebook. It aims at being peer support for those receiving nasty reports from reviewers or editors, sometimes using humor as a buffer. In recent years, however, the emphasis of posts has been

on articles relying too much on generative AI, university staff exhausted by the use of AI tools by students, and nowadays also on the frustration of reviewer reports presumably done with the help of generative AI! It is clear that we need to further clarify the guidance regarding the use of AI and add separate instructions for reviewers as well.

Our Subject Editor Sergio de Miguel addressed the possibility of even committing a sort of scientific fraud in his editorial in 2023 (*Silva Fennica* vol. 57 no. 1) if generative AI tools are used in an unsupervised way. During my short period in the post, there have been some hints of usage of generative AI tools without properly checking the submitted text by the authors. The best control method for keeping the science trustworthy sits between the chair and the keyboard, not of the editor, but primarily of the scientist itself!

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