Chatbots and scholarly databases:
Impressions from trying out Scopus AI

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This viewpoint article explores the Scopus AI — Elsevier's innovative add on to the Scopus database, which allows users to engage with the Scopus database in natural language rather than via Boolean operators. Scopus AI' strength lies in combining the communication properties of a language model with the information integrity of peer-reviewed sources. It does not substitute the need to review the literature, but can be helpful in search, especially if stakes are low and a systematic approach is unnecessary. Because of increased sophistication of tools and information systems, the degree of competencies required from users also increases. Reasonable understanding of how AI works, as well as search expertise, source criticism and scientific skepticism remain essential. With these in place, and with a clear understanding of the purpose of various information tasks, users can be better positioned to decide how best to employ various tools to get the job done.

Keywords: artificial intelligence, AI tools, Scopus AI, academic libraries.

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1. Introduction

Scopus AI is an innovative add-on to the Scopus database, which uses artificial intelligence to answer users' queries in natural language form. Elsevier, who owns Scopus and Scopus AI, offered us at the University Library at the Norwegian University of Science and Technology (NTNU) a demonstration workshop, which took place in Trondheim on 25th of January 2024[1]. The workshop was attended primarily by people associated with NTNU Library, but the invitation was extended to academic librarians in other Norwegian institutions, some of whom participated either in person or digitally. The workshop also had two participants from the IT-department at NTNU. It was important for us at the university library to try out the tool before inviting faculty and students to this kind of workshop. This is because we considered an open invitation to library users might give the mistaken signal that the library endorsed the tool, and perhaps create demand to a product of which we were uncertain. In short, given that concerns with quality, accuracy and integrity are paramount, we wanted to have the opportunity to try the tool without concern that it would be perceived as a recommendation. We also sought to use the opportunity to build AI related competencies among university librarians in preparation to meeting the needs of users.

In this feature article, I share my impressions about the tool, and the main themes that emerged from the workshop, as well as from my own experimentations with Scopus AI after the event. What triggered the idea for writing this article was the fact that notes I wrote as a summary from the workshop and distributed to participants for feedback began to be requested also by people who had not attended, as well as people from other institutions. This feature article is therefore an elaboration on these early notes. Elsevier had no influence in the content or the decision to write it.

Whereas the regular version of Scopus requires a Boolean search string and provides a list of relevant hits, Scopus AI requires a prompt (preferably in the form of a question) and provides a text with answers that include references to articles published in journals indexed in the Scopus database from 2013 onwards. Representatives from Elsevier at the workshop confirmed

[1] The opportunity for trying out the product came after a courtesy visit from Elsevier to NTNU Library, in which they mentioned the launch of the Scopus AI as a new service and offered a demonstration. This demonstration was not something exclusive for NTNU Library. The workshop in Trondheim was the second Elsevier had hosted (there had been one in Denmark about a month before). NTNU Library has not acquired Scopus AI, and participants were not given lasting access to the tool, although some participants did keep access afterward. It seems that trial versions are made available randomly, though I have not had access myself since the workshop.

that Scopus AI uses OpenAI's architecture for the language model and the Scopus corpus for the content (abstract and metadata). In other words, Open AI's large language model (the same that makes up ChatGPT) will formulate an answer based on the information stored in the Scopus database. Since Scopus is a reference (not a full text) database, the information that is available to Scopus AI does not include articles in their entirety.

I see the development of Scopus AI less as a response to general-purpose chatbots, and more as a way to stay ahead of innovations in how people discover academic literature. Tools such as Research rabbit, Consensus, and Elicit, might not significantly threaten the large search platforms and databases for now, but they do introduce a new way of engaging with academic literature that can have future implications to the field, particularly to dominant established players of today. It is worth noting that Elsevier has rebranded itself from being a publisher to an information analytics company, which is aligned with this attempt to keep up and supplement their products with AI functionalities.

Overall, for experienced researchers and librarians, Scopus AI is yet another functionality in the search apparatus, which can be more or less helpful depending on what your field is, how much has been published on your topic and how much you know about it beforehand. For students, though, the task is to make sure they do not miss the opportunity to develop crucial competencies in dealing with information by relinquishing to a machine what their university courses designed as learning opportunities. Looking forward, it is a crucial task for university librarians to facilitate that students who wish to take up innovative tools can do so deliberately, prudently, and wisely.

In the remainder of this article, I will explore the main issues and considerations brought up during the workshop, before concluding with a reflection on information retrieval and academic research.

2. Issues concerning direct quotes and text ownership

One issue that generated much interest during the workshop is that Scopus AI does not mark direct citations with quotation marks and/or italics. Yet, it is not possible to rule out that the answers include sentences that are very close to sources (if not the same words), and that could therefore lead to plagiarism if the text is used verbatim. Moreover, it is unclear whether it is Elsevier or the prompt writer who owns the resulting text. This issue of ownership is

controversial, not the least because LLMs themselves have been trained on copyrighted data [2], and no concrete legal guidelines are in place at the moment. Although it seems for now like outputs from generative AI tools cannot be copyrighted[3], there are no definitive answers, and Elsevier has not made clear their perspective on the issue.

For these and many other reasons, including academic integrity ownership of one's own research process, it is not recommended to cut Scopus AI's summary of the literature and paste into one's own work, regardless of whether you state Scopus AI as a source.

It is rather unlikely (or so I hope) that a researcher would substitute the literature review section of their paper with an automatized literature summary. But it is conceivable that authors of other kinds of texts might be interested in doing so, just as it has become commonplace now to see news articles which contain a box summary made by a chatbot. Nonetheless, using these summaries is not pertinent with Scopus AI, both due to questions about the ownership of the tools output, and because of the lack of attribution to original authors whose work is summarized by Scopus AI.

3. Misinformation and hallucination

The workshop facilitators from Elsevier were proactive in addressing common ethical concerns that arise when using AI tools by emphasizing that Scopus AI minimizes the so-called hallucinations and that the tool is not a black box. This claim should be taken with a grain of salt, though. Lack of transparency is a characteristic of deep learning techniques, upon which all language models are built. I presume what Elsevier means to highlight is that, because answers from Scopus AI come with references, users have the possibility to go back to the original sources and check for themselves. But to claim that the model is not a black box is a stretch too far.

As Teresa Kubacka[4] also points out, how and why some articles are selected but not others is quite an obscure process. Even if we know how Elsevier's algorithms attribute relevance to an article, and how they weigh newer (but uncited) versus older (but much cited) sources, the

[2] Edward Helmore and Kari Paul, "New York Times Sues OpenAI and Microsoft for Copyright Infringement," *The Guardian*, December 28, 2023, https://www.theguardian.com/media/2023/dec/27/new-york-times-openai-microsoft-lawsuit.
[3] James Vincent, "The Scary Truth about AI Copyright Is Nobody Knows What Will Happen Next," *The Verge*, November 15, 2022, https://www.theverge.com/23444685/generative-ai-copyright-infringement-legal-fair-use-training-data.
[4] Kubacka, Teresa. "There Is More to Reliable Chatbots than Providing Scientific References: The Case of ScopusAI," *The Scholarly Kitchen*, February 21, 2024, https://scholarlykitchen.sspnet.org/2024/02/21/guest-post-there-is-more-to-reliable-chatbots-than-providing-scientific-references-the-case-of-scopusai/.

means by which articles are selected would still be vague and difficult to track for most users. This might be sufficient for some applications of the tool, but not others. Elsevier outlines the limitations of the tool as it follows:

> *"While Scopus AI strives to ground its summaries and generative AI features in trusted Scopus content, there may be occasional discrepancies. It is possible for Scopus AI to generate results that could be seen as incorrect, misleading, biased, or even offensive. Scopus AI is not meant to provide legal, financial, or medical advice. Users should not solely rely on Scopus AI outputs without conducting independent research. If you want to utilize Scopus AI generated content in your work, please consult your institutional or workplace guidelines. Do not enter personal, confidential, or sensitive information into Scopus AI"* [5].

Another challenge is related to the fact that language models tend to accommodate presuppositions, even if they are false. In other words, it goes along with what you lay out in your prompt. If you ask: "how does A lead to B?" it is likely to assume that A does in fact lead to B, and not contradict you. This is not exclusively a problem with Scopus AI, and it can be a source of misinformation and of confusing causation and correlation. In Scopus AI, I asked: "does cancer cause smoking?" The response did not explicitly deny or contradict my original assumption but proceeded to respond with a range of evidence to the opposite direction of causality; namely that smoking causes cancer, but not that cancer causes smoking. This example is uncontroversial, but other cases might not be as clear, or be overlooked by less attentive or less experienced users. As a result, attention and awareness concerning benefits and shortcomings of the tools we use in research are crucial.

4. Empirical vs. conceptual questions and the matter of reproducibility

What sorts of questions users feed Scopus AI (and to what ends) is an interesting issue to look at more closely. What would happen if an inexperienced user fed the tool with their own research question and finds that it has already been answered? Or has it? Would they be able

[5] Elsevier, "Scopus AI: Trusted Content. Powered by Responsible AI.," accessed March 12, 2024, https://www.elsevier.com/products/scopus/scopus-ai.

to tell the difference? This matters precisely because Scopus AI is positioned specifically for early-career academics.

The distinction between questions that need empirical work and questions that can be answered with a literature review is not always as clear to students, at least not until they build their own research experience. Scopus AI tries to give users an answer, and the tool does not differentiate between different degrees of confidence in the knowledge that exists[6]. Some questions can be answered with a large amount of available empirical studies, but other questions lie at the limits of knowledge and have few published empirical studies to support them. Less experienced users can get the impression that anything and everything can be answered with studies that have already been done. But I am afraid Scopus AI will not spot a gap in the literature for you, no matter how authoritative the answers may sound.

Apropos of empirical research, the matter of reproducibility also shows itself in AI-powered literature search. Participants at the workshop were informed that the Scopus AI is updated daily. Hence, if two users ask the exact same question on the very same day, they will get very similar answers, both in terms of text and the references that are linked. Differences may occur because it is a language model that designs and conveys the answer, and language models are probabilistic. But the underlying information base is the same, i.e., the Scopus database. However, if you repeat a question six months from now, the additional articles that have been published in that period will update the answer. Like many things with AI-powered tools this can be a double-edged sword: while it is a strength that updated material is added to the database, the reproducibility of information search strategies is compromised.

5. Information security and business model

On the matter of information security, Elsevier informed that the prompts users provide the tool are not saved, and that no other permission is required beyond what is required for the regular version of Scopus. Since Scopus AI is neither a downloadable software, nor the type of tool users would feed with personal or strategically confidential data, these issues seem less pressing than in other types of AI tools, and Scopus business model relies on subscription fees, instead of harvesting user's data (though that could change in the future and it is important to be observant).

[6] Scopus AI might let users know if little is found in the database about your particular question, though.

The tool's pricing will be crucial to determine the tool's adoption. Scopus AI is offered at the moment as an add-on to Scopus. That is, you need to have a subscription to the regular version of Scopus, to be able to use the tool. This model might continue as such, but it is also conceivable that Scopus AI becomes an integral part of Scopus for a higher price, or that it is marketed on its own. Scopus is marketed to institutional customers, which are not only continuously pressed for resources, but also experiencing a wave of new AI-powered tools that entail additional expenditures.

6. Prompt bias: how you formulate your prompt question matters a great deal

The way you ask a question has a lot to say about which answers and references are given. This means that the need to think about synonyms and other formulations of a prompt is still part of robust search processes.

I tried to see if I could get Scopus AI to suggest one of my own articles. I tested three approaches to a problem area that is essentially the same. The questions were: (i) is waste management an industrial sector? (ii) is waste management a business? (iii) is waste management a business or a public service?

To both the first and second questions, Scopus AI recommends an article I authored entitled *"Exploring the industrial dynamics of waste management and recycling"*[7]. These questions use a vocabulary that is very close to the language used in the title and abstract. While the third question is at heart the same as the first two, Scopus AI did not suggest this article as a source. I suspect that the reason is that the article undertakes the discussion of business vs. public service in its length, but not in the abstract, and is therefore inaccessible to Scopus AI. It is also worth mentioning that the responses from Scopus AI did not approach this duality about waste management as a public service and a business at all before it was prompted explicitly. As someone with knowledge from this subject matter, this is an important issue I would have liked to see addressed. This brings me to the issue of prior knowledge and experience.

Having a certain degree of prior knowledge is important to assess the quality of the response provided by AI tools, and Scopus AI is no different. Like other large language models, the answers from Scopus AI are given with a greater degree of authority, but the quality of an

[7] Leticia Antunes Nogueira, "Exploring the Industrial Dynamics of Waste Management and Recycling: A Call for Research and a Proposed Agenda," *Waste Management* 170 (October 1, 2023): 33–39, https://doi.org/10.1016/j.wasman.2023.07.022.

answer depends on the quality of the sources. Quality assessment of sources can be subjective, especially in the social sciences and humanities, where one cannot simply say, for example, that evidence from a meta-analysis is superior to anecdotal evidence, or that the number of participants in an experiment determines to a great extent the quality of the findings. If the users lack competence on source criticism, have little developed scientific skepticism, and/or no prior knowledge of the topic, the danger that the tool and its answers could be misused is not negligible.

It can be difficult for some user groups to assess the truth or value of various claims. As much as it would be wonderful if it were the case, the fact that research results have been published does not necessarily mean that they are uncontroversially true. This applies especially when it comes to controversial topics characterized by uncertainty and loaded with ethical or societal values. This problem is of course also found in other ways of searching for information; but traditional literature retrieval systems present findings in a less authoritative manner, rather than as established and accepted knowledge (which language models seem to do).

7. Good and not so good uses of Scopus AI

Judging whether Scopus AI is a good tool or not depends heavily on one's expectations, as well as their point of reference.

Scopus AI is great if the alternative is using general-purpose chatbots as information sources, which anecdotal experience suggests many students are doing. A colleague told me she observed students saying something to the effect of *"why google it when you can just ask the chat* [i.e., ChatGPT]*!? If you just ask the chat you avoid having to go through the list to get your answer."*[8] Scopus AI might also be better than AI-powered search engines, like Bing Co-pilot for certain kinds of questions, given that its material is composed of a curated corpus that relies on peer-reviewed and editorial work, rather than the entire internet.

Nonetheless, Scopus AI is not better than a literature review written by a knowledgeable and experienced person. There are many reasons for this, none the least that the Scopus database does not index all worthwhile knowledge, as also acknowledged by Teresa Kubacka[9].

[8] Thanks to Marie Opdal Ulset from the Department of Social Anthropology at NTNU for sharing preliminary results from her research and contributing to this insight.
[9] Kubacka, "There Is More to Reliable Chatbots than Providing Scientific References."

But substituting experts does not seem to be the purpose of the tool anyway, and as a tool for exploring a theme and discovering sources, Scopus AI offers good potential.

A crucial concern with the widespread and uncritical use of language models is that it can be dangerous to use a tool that is good at communication for purposes that have to do with information. While ChatGPT can yield fantastically accurate results, it can just as well produce false, misleading, and disastrous outputs. The main issue with general-purpose chatbots is not that they are always false, but that the veracity of what they produce can be difficult to assess. That is, unless you already know, in which case the purpose of using it as a source is defeated in the first place. Seen from this perspective, answers from Scopus AI have a higher quality and seem to be more reliable than answers from ChatGPT or similar language models trained on internet data.

Other than comparing Scopus AI with general-purpose chatbots, another comparison concerns Scopus AI and regular Scopus. Here, the challenge is that they serve slightly different purposes. Regular Scopus will be more suitable than Scopus AI for a systematic literature review, but Scopus AI can be quite useful for an early exploration, or to quickly identify relevant academic sources to a theme. Scopus AI can be a place to start your acquaintance with a new topic. Users can then become familiar with selected relevant sources and read up before starting a more systematic and comprehensive search.

Another interesting application is using Scopus AI for brainstorming. I have heard quite often as a recommendation for students seeking to make legitimate uses of chatbots that they can use the tool as a conversation partner to get started. Scopus AI does not engage in a continued conversation like chatbots do, but it does suggest additional questions and leads from your initial prompt. In that respect, Scopus AI appears to be a safer tool for brainstorming purposes than general-purpose language models. Not only will the user come out with a few ideas, but also with a few academic sources at hand.

8. Final considerations: Keep in mind what the point is in reviewing the literature

In my experience with the discussion of AI tools, much excitement and concern can lead to losing sight of what really matters; namely what the tool is supposed to help with and how.

The point of doing a literature review is, firstly, to become familiar with the field, and secondly — if you are already well versed in the literature — to place one's contribution among

the knowledge landscape. For researchers, the value in going through the literature lies in the process to a much greater extent than in a ready-made text. For students, the point is not to hand in an assignment, but to experience the research process, learn from it, and develop a range of (information) competencies that go beyond one's specific academic discipline. For both, it is essential to develop information competencies that support them in this task.

New AI-powered tools, such as Scopus AI, can be a useful addition to users' toolbox. Nonetheless, it is now more crucial than ever before to be attentive to the process and aware of how the tools we employ in our work are designed, how they work and what their limitations are. Because tools and information systems are becoming more sophisticated, the degree of competencies required from users also increased — at least if the goal is not just convenience, but the development of expertise. Hence, an important challenge is to make sure we never lose sight of the purpose of engaging in various information-oriented tasks. If we are clear on that, we can be better positioned to decide how best to employ various tools to get the job done.

The issue with AI is precisely that it blurs many of the norms and institutionalized lines in research and higher education, to the point that it can be difficult to issue guidelines for using AI tools that are both concrete and enforceable. Therefore, this clarity of purpose, combined with an adequate degree of technological literacy, goes a long way in making sure that we use tools in a way that works for and not against our best interests. If users are to engage with innovative tools, especially those in which the inner workings can be obscure, they need to have a reasonable understanding of how AI works and its limitations. Search expertise, source criticism and scientific skepticism – including skepticism about how the tool selected which sources to base their answers on – remain essential.

That said, Scopus AI' strength lies in combining the communication properties of a language model with the information integrity of peer-reviewed sources. It will not substitute the need to review the literature, but it can be useful in search, especially if stakes are low and a systematic approach is unnecessary. Human librarians and human researchers still matter, and information literacy in research and higher education are now more valuable than ever before.

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