

## **Harbingers-3: a longitudinal, international study of early career researchers' engagement with generative AI**

### **The nature and purpose of the proposed project**

Generative AI<sup>1</sup> has attracted much attention this past year. It could be yet another false dawn, and suppositions of human-level intelligence are certainly overblown, yet this may be an advance in automation. As significant for scholarly production as word-processing and desktop publishing, the internet, and the web. Maybe it will come to nothing, but it is causing a stir and will leave a mark. There is a gold-rush in progress, a lot of shovels are being sold — or at least a lot of Nvidia GPUs.

There is little empiric evidence available regarding the practice, process, advantages, disadvantages, or risks of using generative artificial-intelligence tools in research. This is a situation that needs to be redressed: if these tools do prove to be influential, changing the way we conduct research, the effects on the efficacy and integrity of the body of human knowledge may have far-fetching implications for all. The investigation proposed here aims to address the knowledge gap via a study of early career researchers (ECRs) — tomorrow's professors and scholarly influencers, whose millennial mindset may render them especially open to change.

### **A description of the proposed work**

Seeking to examine the impact of generative AI on junior researchers, we will set out to discover how it affects the way ECRs do research, focussing, in particular, on how they integrate generative AI tools into information and publishing practice. We will compare awareness of/ these tools with evidence of familiarity and use, the extent of their perceived expediency, on the one hand, and perceived limitations, on the other. Taking a Diversity, Equity and Inclusion approach, we will be looking for similarities and differences among ECRs by gender, country, background, discipline and seniority. Thus, to determine the implications of generative AI tools for the achievement of integrity, transparency and openness in the creation of information and its publication.

The study will be broad, covering all possible scholarly activities and work-life aspects, and firmly anchored in the context afforded by the longitudinal *Harbingers* projects 'change' data, which had the transformations occasioned by social media, open science, millennial attitudes and the pandemic at its heart. We will also bring to the project knowledge and expertise gained from years of stress-testing the scholarly system. Having already shone a strong light on the existing cracks in the system (peer review is a case in point), we are well-placed to establish whether generative AI could rectify the situation, or make matters worse.

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<sup>1</sup> 'Generative AI' encompasses Large Language Models (LLMs) of which ChatGPT is presently the best known.

The methodology employed will be similar to that of the *Harbingers-2* study, but since that focussed specifically on the Pandemic, there inevitably will have to be some recasting and rearranging of the questions.

Specific questions to investigate:

1. How ECRs take meaningful steps towards fostering trust in and using of generative AI tools, whilst aligning their behaviour with established scholarly values and practices.
2. How ECRs want generative AI tools to be integrated into their research, if at all, and if so, what they see as the advantages/opportunities or disadvantages/threats (or both) that will result.
3. How widespread the use of generative AI tools already is in the research: how and for what purposes ECRs use it, with what advantages or disadvantages (or both).
4. Where ECRs place the limits to the use of these tools, i.e., what their red lines are. How they negotiate the place and role of their contribution versus the contribution of generative AI tools, i.e., which tasks stay in their zone, and which tasks are delegated to the latter.
5. What training needs are necessitated by the integration of generative AI tools into research, if we are to prevent misunderstandings, unawareness and a gap between intention and action that experience has shown to be the result of insufficient formal training for researchers (Open Science comes to mind here).
6. What risks generative AI poses for scholarly integrity and how ECRs, possibly less aware or experienced than their well-established colleagues, deal with them.
7. How the introduction of generative AI tools into scholarly practices affects non-English speaking versus native speakers of the language (for example, in writing articles), and what its effects are for combatting inequalities (if any).

The investigation will be conducted internationally, to enable the identification of best practice wherever it may be found and to highlight country-specific developments. The participating countries will be China, France, Malaysia, Poland, Spain, UK, and US. All areas of the sciences and social sciences will be covered.

As noted, the study will use the tried and tested mixed methodology of the previous *Harbinger* projects, which has proven its strength for calibrating the extent, permanence and direction of scholarly change. Thus, it will combine data from: 1) a substantive and ongoing literature review; 2) scoping focus groups; 3) in-depth, semi-structured, repeated interviews with 20-22 ECRs from each country (around 150 ECRs<sup>2</sup>); 4) an international questionnaire seeking to test and generalise the interview-stage findings. Importantly, it is repeat interviewing that will be at the heart of the study, a necessary

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<sup>2</sup> Some will be ECRs from the *Harbingers* Pandemic study and we will have a long-term understanding of their behaviours; those among them who have since obtained tenure will provide invaluable insights.

measure in a fast-moving and unpredictable field, such as generative AI, where snapshots studies could prove misleading. To this end we propose 3 rounds of repeat interviews at intervals of six months. In addition, we propose a final stage of workshops/focus groups with stakeholders – policy makers, HE research officers, journal editors, research supervisors, funders – to discuss our key findings and develop recommendations.

We are aware that the term 'generative artificial intelligence', even just 'intelligence', are slippery concepts that mean different things to different people. Our interview schedule will be set in a two-fold framing context; speculation about 'AI' that has been provoked by recent publicity for ChatGPT, and underlying advances in information technology and modelling of data which may or may not be perceived as 'AI'. Then, as our questioning always aims to invite a conversation, the concepts referred to will be further clarified.

To conclude:

- 1) As the Harbingers studies have proven, our approach is well-suited to finding out where ECRs – and therefore the scholarly community – are heading.
- 2) Given widespread diversity, equity, and inclusion concerns, young, vulnerable researchers count as an important group to study, especially coming as they do from very different countries, some of which are on the periphery of the scientific world.

### **Pilot**

This will be conducted during October -December 2023 and will feature about 70 depth interviews and supporting literature review.