



Scholars Should Report Documented Due Diligence of Literature Searches in Their Research Problem Domain^{*}

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Commentary

Research with experience and expertise in a problem domain requires familiarity, awareness, and knowledge of the historical record of published literature in that problem domain. In science, engineering, and medicine, the reproducibility, validity, reliability, and integrity of that knowledge inherently depends on its provenance (C. Taswell 2010). For much of the last century, scholarship required documenting due diligence with searches of the prior art and published literature in the relevant research problem domain. Visionaries predicted that information technology advances would replace the need to travel to different physical libraries, walk through the stacks, and search for printed books and journals on the shelves, instead with the anticipated ability to retrieve any published work on Earth with a few clicks and keystrokes on a computer (Bush et al. 1945).

Common sense argues that the elimination of search limitations caused by the time and distance to access physical libraries should raise, rather than lower, scholarly standards for what constitutes an acceptable literature search. However, since the beginning of the Internet Age, many authors active in research publishing have experienced the pressure of the publish-or-perish environment to move fast and make claims of novelty due to the “perverse incentives and hypercompetition” (Edwards et al. 2017). This pressure to game the bibliometrics through quantity at the expense of quality creates an incentive to shirk the time-consuming work of authentic scholarship in favor of unethical hacks such as fabrication, plagiarism, dismissive and ghosting literature reviews (A. Craig and C. Taswell 2025). Reestablishing standards for truth, honesty, authenticity, and integrity requires countervailing incentives (Edwards et al. 2017).

The most basic due diligence for any scholar requires searching the published literature within the research problem domain (S. K. Taswell, Trigg, et al. 2020). Finding useful knowledge in prior work then imposes the ethical obligation to cite and discuss that earlier work, and to distinguish what was already published by previous authors in contrast to what new claims are contributed by the current author. However, the pressure to appear more novel leads some to neglect completing a literature search, and instead, write a dismissive literature review simply claiming, “To the best of our knowledge, no studies have investigated...” (Phelps 2012). Some authors may take this unethical hack a step further, disregarding prior work they know exists, in which case those same

words constitute a ghosting literature review (A. Craig and C. Taswell 2025). Either way, these false statements disseminate misleading information that may dissuade other readers from seeking valuable earlier work, especially those who have not been trained to perform their own independent literature searches.

Since 2014, the Brain Health Alliance Virtual Institute (BHAVI) has passed on traditions of scholarly integrity through mentoring (S. K. Taswell, A. G. Craig, et al. 2019). However, it is not enough for young people to learn scholarship in school and mentoring programs and then abandon it when they realize powerful institutions only value the superficial appearance of progress. Peer review once kept most misinformation, dis-information, anti-information, and caco-information from entering the scholarly record, but a lack of transparency and accountability combined with pressure to work quickly and favor the well-connected can compromise its efficacy (S. K. Taswell, Trigg, et al. 2020). Peer review must evolve to meet the challenges of the Internet Age by replacing anonymity with attribution, secrecy with accountability, and transparency open to the public. We called for this approach to scholarship previously in the form of reproducible peer review, in which a reviewer documents the sources of information and the lines of reasoning well enough that a new reviewer can find the same information and follow the same logic to arrive at the same assessment (A. Craig, Lee, et al. 2022). We further called for the publication of peer reviews, creating an incentive for reviewers to write quality reviews that their peers will recognize and cite, as well as a disincentive to write dishonest reviews because exposed to public scrutiny.

Prior to our literature review on peer review for scholarship (A. Craig, Lee, et al. 2022), we introduced a specific form of accountability through reproducibility with the FAIR Metrics (A. Craig, Ambati, et al. 2019), for which the self-recursive acronym FAIR refers to the phrases Fair Attribution to Indexed Reports and Fair Acknowledgment of Information Records. We demonstrated use of a family of FAIR Metrics that quantify how often an article appropriately cites sources, misrepresents the content of sources, accurately presents claims as novel, or plagiarizes from prior work (A. Craig, Athreya, et al. 2023). We later extended this approach with another family of FAIR Metrics that evaluate the rigor with which reviewers document sources of information with citation of references in their peer reviews (A. Craig and C. Taswell 2024).

However, we need reviewers to evaluate the FAIR Metrics using more than just their current knowledge. To recognize plagiarized knowledge, reviewers need to have seen that knowledge in an earlier source. To have a significant chance of finding the original source of the information,

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they need to search for it. Even if they do recognize the plagiarism and call attention to it, the authors may claim that the prior work did not appear in their own search. To give reviewers a fighting chance of catching plagiarism, we need reproducible literature searches. That is, we must require that authors record their literature searches in enough detail that the reviewer can follow the same steps and compare the resources they found to those the author claims to have found. While authors and reviewers may find some differences in search results due to changes in the search tool or in the underlying index of resources, the overall state of knowledge in a problem domain should change little between submission of an article and assignment of that article to a reviewer. When some new development has occurred in that interval, the reviewer can give the authors a chance to update their work.

Recording the literature search strategy has long been a defining feature of systematic literature reviews, as the search methodology can strongly influence the conclusions reached (Harari et al. 2020). The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement provides a guideline for finding, evaluating, selecting, and synthesizing primary research (Page et al. 2021). However, these PRISMA guidelines do not specify exactly what details of the literature search and results the authors should record. As we develop our own guidelines, we will consider PRISMA as a reference point but will need to develop sets of standards appropriate to different kinds of publications, including literature reviews, primary research articles, and commentaries.

The Brainiacs Journal will transition toward requiring inclusion of a literature search report with each article submission. We will analyze different search engines, library databases, and other search resources to determine what details authors will need to document. We will test different approaches to documenting and replicating searches to find suitable standards of due diligence for different problem domains. We will also develop criteria for when the search results are the same, similar, related, or different (Athreya, S. K. Taswell, Mashkoor, et al. 2020). Ultimately, we plan to record and publish both authors' and reviewers' search records using the Nexus-PORTAL-DOORS-Scribe (NPDS) Cyberinfrastructure. One of the original goals of the PORTAL-DOORS Project (PDP) has always been to track the provenance of knowledge in formats that are readable to both humans and automated agents (C. Taswell 2007). For example, we have applied the NPDS cyberinfrastructure to tracking provenance of cultural heritage artifacts (Athreya, S. K. Taswell, and C. Taswell 2021). To facilitate recording literature searches and results in a format usable by semantic reasoning engines, we will extend the FAIR Metrics module of the PDP-DREAM Ontology. This module already features classes and properties useful for recording the comparison of claims between the scientific report or peer review under analysis and those in prior work (A. Craig and C. Taswell 2023).

Requiring authors to report explicit assertions about where, when, and for what they searched will force them to either actually do the search or lie outright. This will eliminate ethical ambiguity, forcing the author's own conscience to serve as a first line of defense against ghosting and dismissive literature reviews. Reviewers will then serve as a second line of defense when they reproduce the search and draw on their own knowledge of the literature published in the research problem domain. Publishing both authors' and reviewers' literature search reports will bring to bear a third line of defense: the larger community of stake-holders. It will expose those who shirk their due diligence to public scrutiny and will make visible and citable the often hidden but essential work that sets apart those authors who are true scholars.

Modeling this practice in the Brainiacs Journal may be only a small step toward shifting the incentives to once again favor scrupulous accumulation and reporting of knowledge. Nevertheless, it will establish an example that other organizations can emulate. Together, we can turn the tide and restore the public's trust in scholars across science, engineering, medicine, and other fields where humans work to solve the problems afflicting life on planet earth.

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