

## **Ethics of Open Access to Biomedical Research: Just a Special Case of Ethics of Open Access to Research**

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**ABSTRACT:** *The ethical case for Open Access (OA) (free online access) to research findings is especially salient when it is public health that is being compromised by needless access restrictions. But the ethical imperative for OA is far more general: It applies to all scientific and scholarly research findings published in peer-reviewed journals. And peer-to-peer access is far more important than direct public access. Most research is funded to be conducted and published, by researchers, in order to be taken up, used, and built upon in further research and applications, again by researchers, for the benefit of the public that funded it -- not in order to generate revenue for the peer-reviewed journal publishing industry (nor even because there is a burning public desire to read [much of] it). Hence OA needs to be mandated for all research.*

1. All peer-reviewed research articles are written for the purpose of being accessed, used, applied and built upon by all their potential users, everywhere, not in order to generate royalty income for their author (or their publisher). (This is *not* true of writing in general, e.g., newspaper and magazine articles by journalists, or books. It is only true, without exception, of peer-reviewed research journal articles, and it is true in all disciplines, without exception: [Harnad 2003](#).)

2. Research productivity and progress, and hence researchers' careers, salary, research funding, reputation, and prizes all depend on the usage and application of their research findings ("research impact"). This is enshrined in the academic mandate to "publish or perish," and in the reward system of academic research.

3. The reason the academic reward system is set up that way is that that is also how research institutions and research funders benefit from the research output they produce and fund: by maximizing its usage and impact. That is also how the cumulative research cycle itself progresses and grows, along with the benefits it provides for society, the public that funds it: In order to be used, applied, and built upon, research needs to be accessible to all its potential users (and not only to those that can afford access to the journals in which the research happens to be published.).

4. Open Access (OA) -- free online access -- has been demonstrated to increase research usage and impact by

25%-250% or more. This "OA Advantage" has been found in all fields: natural sciences, biomedical sciences, engineering, social sciences, and humanities ([Hajjem et al. 2005](#), Figure 1).

**5.** Hence it is true, without exception, in all fields, that the potential research benefit is there, if only the research is made OA.

**6.** OA has only become possible since the onset of the online era.

**7.** Research can be made OA in two ways:

(7a) Research can be made "Gold OA" ([Harnad et al. 2004](#)) by publishing it in an [OA journal](#) that makes it free online (with some OA journals, but not all, covering their costs by charging the author-institution for publishing it rather than by charging the user-institution for accessing it; many Gold OA journals today still continue to cover their costs via subscriptions to the paper edition).

(7b) Or research can be made "Green OA" by publishing it in a conventional, non-OA journal, but also [self-archiving](#) it in the author's [Institutional Repository](#), free for all.

**8.** Despite its benefits to research, researchers, their institutions, their funders, the R&D industry, and the tax-paying public that funds the research, only [about 15%](#) of researchers are spontaneously self-archiving their research today (Green OA). (A somewhat lower percentage is publishing in Gold OA journals, deterred in part by the cost.)

**9.** Only Green OA is entirely within the hands of the research community. Researchers' funders and institutions cannot (hence should not) mandate Gold OA; but they can [mandate](#) Green OA, as a natural extension of their "publish or perish" mandate, to maximize research usage and impact in the online era. Institutions and funders are now actually beginning to adopt Green OA [mandates](#) especially in the UK, and also in Europe and Australia; the US is only beginning to propose Green OA mandates.

**10.** Some publishers are [lobbying](#) against Green OA self-archiving mandates, claiming it will destroy peer review and publishing. All existing [evidence](#), however, is [contrary](#) to this ([Berners-Lee et al. 2005](#); [Swan 2005](#)). (In the few fields where Green OA already reached 100% some years ago, the journals are still not being canceled.) Moreover, it is quite clear that even if and when 100% Green OA should ever lead to unsustainable subscription cancellations, journals can and will simply [convert](#) to Gold OA and institutions will then cover their own outgoing Gold OA publishing costs by redirecting part of their windfall subscription cancellation savings on incoming journal articles to cover instead the Gold OA publishing costs for their own outgoing journal article output. The net cost will also be much lower, as it will only need to pay for [peer review](#) and its certification by the journal-name, as the distributed network of OA Institutional Repositories will be the online access-providers and archivers (and the paper edition will be obsolete).

**11.** One of the ways the OA movement is countering the lobbying of publishers against Green OA mandates is by forming the "[Alliance for Taxpayer Access](#)." This lobbying group is focusing mainly on biomedicine, and the potential health benefits of tax-payer access to biomedical research. This is definitely a valid ethical and practical rationale for OA, but it is definitely [not](#) the sole rationale, nor the primary one.

**12.** The primary, fundamental and universal rationale for OA and OA mandates, in all disciplines, including [biomedicine](#), is researcher-to-researcher access, not public access (nor even educational access). The vast majority of peer-reviewed research in all disciplines is not of direct interest to the lay public (nor even to students, other than graduate students, who are already researchers). And even in biomedical research, what provides the greatest public benefit is the potential research progress (leading to eventual applications that benefit the public) that arises from maximizing researcher-to-researcher access. Direct public access of course

comes with the OA territory. But it is not the sole or primary ethical justification for OA, even in biomedical research.

**13.** The general ethical rationale and justification for OA is that research is funded, conducted and published in order to be used and applied, not in order to generate revenue for the journal publishing industry. In the paper era, the only way to achieve the former was by allowing access to be restricted to those researchers whose institutions could afford to subscribe to the paper edition. That was the only way the true and sizable costs of peer-reviewed research publishing could be covered at all, then.

**14.** But in the online era this is no longer true. Hence it is time for the institutions and funders who employ the researchers and fund the research to [mandate](#) that the resulting journal articles be made (Green) OA, to the benefit of the entire research community, the vast R&D industry, and the tax-paying public. (This may or may not eventually lead to a transition to Gold OA.)

**15.** It is unethical for the publishing [tail](#) to be allowed to continue to wag the research dog. The dysfunctionality of the status quo is especially apparent when it is public health that is being compromised by needless access restrictions, but the situation is much the same for all scientific and technological research, and for scholarship too, inasmuch as we see and fund scholarly research as a public good, not as a subsidy to the peer-reviewed journal industry.

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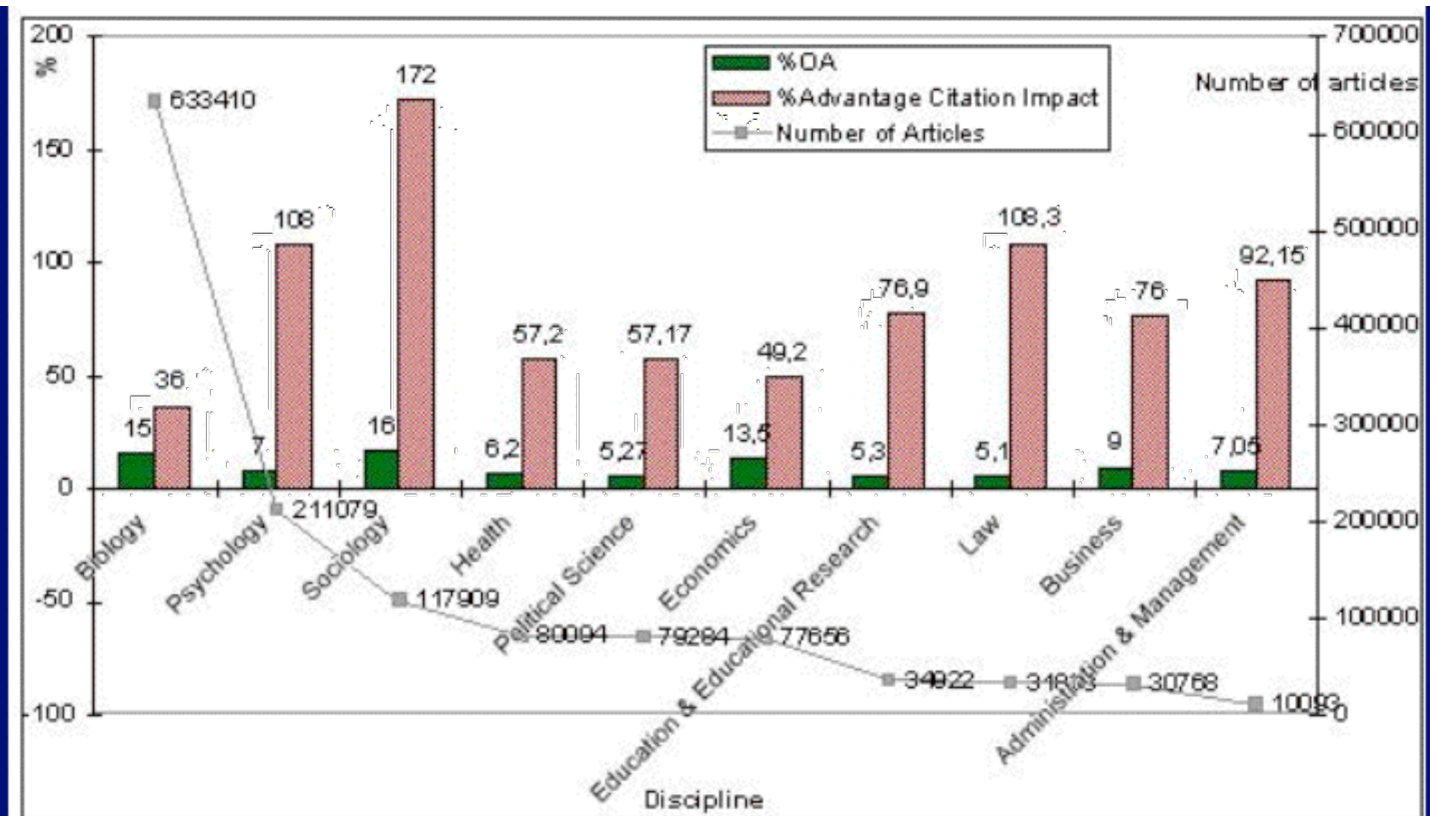
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## **Figure1**



By discipline: total articles (OA+NOA), gray curve; percentage OA:  $(OA/(OA+NOA))$  articles, green bars; percentage OA citation advantage:  $((OA-NOA)/NOA)$  citation, red bars, averaged across 1992-2003 and ranked by total articles. All disciplines show an OA citation advantage (Hajjem et al. IEEE DEB 2005)