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Peer-review for the peer-review system

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Abstract

The process of peer-review of papers submitted for publication and of grant proposals is widely accepted in modern science as a crucial guarantee of high-quality work. Foremost in restricted research areas, anonymous reviewers and editors may use their power to slow down or even reject competitive yet worthwhile work that does not fit or is questioning their own dogmas. This potential “peers” conflict of interest of may be particularly expressed in areas where empirical proofs of findings are *de facto* impossible, e.g. in physical anthropology. An example, two-way anonymous (double-blind) peer-review process improves the overall quality of evaluation but it is hard to implement in a highly specialized research field. Yet, the introduction of a completely open peer-review policy would most likely be supported by the overwhelming majority of reviewers. Furthermore, it may increase the overall quality of peer-review with reviewers to have their name acknowledged. Science should be about the possibility of advertising fresh concepts on evidence-based results in a non-biased, egalitarian, and open way with transparency the prime goal of editing such scientific discourse. By raising our foremost concerns and, hopefully, by the implementation of the proposed policy, we believe that these stated goals can be achieved, thus enhancing the true purpose of peer review particularly in the complex situation of scientific niches.

Biological anthropologists form a rather small community within the scientific world. This circumstance has advantages such as collegial straightforward collaborations, but it could also lead to systematically caused disadvantages e.g., in the current process of research publication. Science in general, and major biological anthropological communication fora are using the well-established peer-review system.

The peer-review process of grant proposals and papers submitted for publication is widely accepted in modern science as a crucial guarantee of high-quality work, even if the results presented in a particular manuscript are positive or negative (*Olson et al. 2002*). Peer-review has been described to be a similar power control in research as in the system of “checks and balances” in US politics (*Buchman 2001*). The fact that experts control the scientific output of their colleagues allows scientific data of only a certain quality standard to be published, usually in a very concise, doubtless and understandable form. As all human quality-controlling systems, the design of the peer-review process has major drawbacks. These will be critically addressed here, as far as they are relevant to the particular situation of research in biological anthropology. Positive proposals, to overcome at least some of these problems, will be suggested. The authors would like to emphasize that they personally were never serious victims of the issues raised here; nevertheless, they summarize thoughts and concerns, which were brought up constantly in numerous talks among them and by co-workers within the field.

By evaluating the peer-review process, one has to be fully aware that, first, most of the major breakthroughs in the history of science quite likely would not have been able to be accepted by this modern publication system. Obviously, it is more difficult to publish novel ideas and challenging concepts contradicting the scientific *Zeitgeist* than following scientifically cleaned pathways. Would, for example, fundamental pamphlets by individuals such as *Leonardo da Vinci* (1452-1519) or *Nicholaus Copernicus* (1473-1543) have withstood modern peer-review criteria? Also, some of the currently most often cited and accepted classic books have never had to withstand critical review. Anyone familiar with “pre-MEDLINE®-time” literature will concede that some of this “old”, often non-English and not peer-reviewed literature is of uppermost intellectual quality, showing in particular, painstaking attention to detail and intellectual independence. Furthermore, in most recent times, cases of substantial publication errors and misconduct, despite the up to date application of the peer-review process, have been increasingly documented (*Paalman 2000*). Profound meticulous peer-review would be a *conditio sine qua non* to let the system work properly; however, this is often the case with the vast majority of reviewers having never been trained for their decisive tasks (*Snell & Spencer 2005*) and, unfortunately, just hastily doing their job. For example, two-thirds of intentional major errors in a fake manuscript have not been picked up by peer-reviewers (*Baxt et al. 1998*). Additionally, some reviewers may use their anonymous power to slow down publication or even reject possible competitive work that does not fit or is questioning their particular dogmas. This potential conflict of interest of the reviewers has already been addressed (*Buchman 2001, Henneberg 1997*) and may be strongly expressed in certain subfields of biological anthropology, where empirical proofs of findings are *de facto* almost impossible, e.g., in paleopathology or paleoanthropology. Finally, some editors make final decisions on manuscript acceptance different from the advice of the majority of “peer” reviewers. Thus, the editor then acts as “peer” as well, of even higher importance than the “external review specialists”. Editors are ultimately responsible for the quality of their journals and must be able to exercise control over what is published, independent from opinions of individual reviewers. At the other extreme, and possibly as detrimental to the reviewing process, some editors do not themselves weigh the review and authors response in a critical manner.

An increasing number of research publications in leading journals in biological anthropology are originating from researchers with other than American or English

speaking backgrounds. For example, 43% of all papers in the *American Journal of Physical Anthropology* for the year 2001 (*American Association of Physical Anthropologists 2002*) came from researchers in foreign institutions. The exact same percentage of “foreign” authors – primarily based in non-US-institutions – can be found in 2003 in *Evolutionary Anthropology* (N = 16 out of 37 authors in the “articles” section). Due to this widespread and disparate background of authors, it is thought that the editorial boards of major US-journals that publish in the area of biological anthropology should represent a more global background. This might not only help to interpret some of the linguistic pitfalls caused by non-native English contributors, but it may also help to overcome some underlying cultural misunderstandings. Furthermore, the cadre of experienced reviewers should reflect the breadth and background of the published authors. For a radiology journal the site of origin of a manuscript showed a significant (yet debatable) impact on the final disposition of a submitted paper (*Kliwer et al. 2004*). Especially challenged are non-English speaking researchers as they try to communicate their findings in the current scientific world, where the overwhelming majority of high impact journals are in English. It seems logical that a manuscript of similar scientific value but formulated in poor English, is less likely to be accepted by critical reviewers than one written in a more professional English style. The poorer English style may also get a slower feedback from reviewers due to its overall lower linguistic appeal. Data on such an assumed delay, caused only by English barriers rather than by lack of scientific quality, does not necessarily exist in the field of biological anthropology. Even so, this may be worth investigation, since time to publication is increasingly crucial in our “fast-science” world and, surprisingly, the time to publication often does not only depend on core research issues such as statistical significance of results (*Dickersin et al. 2002*).

The internet allows an amazing, easy access to science. A high-profile web site could be dedicated to post peer-reviewed papers and, therefore, supplement paper-based publications (*Wang et al. 2004*), or through open-access publishers such as BioMedCentral, where all reviews and subsequent author replies of accepted papers are posted online. Also, a web-based review process in addition to prepublication availability of research articles, as currently offered by most major journal publishers, has its advantages. Electronic reviews promotes the inclusion of foreign reviewers (*Davidoff 2001*), the specific review of research protocols (*Eysenbach 2004*), and may speed up the entire publication process. This improves competition with the ex-

isting non-peer-reviewed electronic pre-print archives (Taubes 1996). Furthermore, pre-publication comment systems for selected categories of articles are available in medicine (Marty 2002). Readers could remark and contribute substantially to online manuscript versions, which are still in revision. Similar approaches are frequently used in Economics, where so called “working papers” are an established and respected tool for the dissemination of scientific data. “Working-papers” are a category of citable, mostly (at least externally) unrevised manuscripts that are open for critical discussion and are preliminary posted in online, easily accessible departmental-based series. One wonders if similar forms of pre-publication posting of manuscripts encouraging discussion would be possible in a voluntary form within the area of biological anthropology. Such critical input may incorporate not only the opinions of invited key researchers – as practiced by *Current Anthropology* – but when appropriate, by the broader scientific audience.

A personal relationship between the authors and the reviewers in a small scientific community, such as biological anthropology, has both, advantages and disadvantages. If one receives a manuscript for review from an unknown foreign person or possibly even from an institution of unfamiliar scientific record, the manuscript may be treated differently than one received from an old friend or major collaborator. In the second case, the author may not only follow the reviewers’ own scientific paradigms, but he may more frequently cite the reviewer’s publications. This may also increase the reviewer’s own citation index, not bad for the burden of reviewing which on the average only takes ca. three hours or less per paper (McNutt et al. 1990, van Rooyen et al. 1999, Snell & Spencer 2005). In order to get non-spectacular results published, an author may *faute de mieux* follow well-respected consensus paths, rather than proposing non-conventional innovative ideas, which may more likely be rejected by conservative reviewers. Unfortunately, this is particularly true for newcomers in a restricted scientific community such as biological anthropology. On the other hand, the idea that authors should name – and usually the editor follows this suggestions – its own potential manuscript reviewers does not add to the independency of the peer-review system. As an author, one would never list a possible (yet most qualified) reviewer, which is known as a notorious critical character; so again, easily accepted research is promoted by such a review system. The opposite that an author is allowed to list potential reviewers to be excluded does not boost an open review policy either.

Homo homini lupus est! Therefore, the introduction of a two-way anonymous (double-blind) peer-review process, where both the reviewers and the authors are unknown to each other, should improve the overall quality of evaluation (McNutt et al. 1990). This system might be achieved in high-impact medical journals by formulating the manuscript text in a way that the authors and affiliations cannot be identified, yet at least some reports highlight that this system faces difficulties (Katz et al. 2002, Liebeskind 2003). It is particularly difficult to implement in a scientific niche as in some subfields of biological anthropology where styles and topics of research are often indicative of specific authors. Yet, the introduction of an unblinded peer-review process would not only most likely be supported by the overwhelming majority of potential reviewers – 94% in an earlier explorative study (Snell & Spencer 2005) – but could increase the overall quality of peer-review since they see their name acknowledged, possibly in the printed version of the reviewed paper, as e.g. seen in opinion papers of the Royal College of Obstetricians and Gynaecologists (UK). The willingness of undertaking a time-consuming honest review is honorable, and is usually regarded as being both an altruistic professional duty and an educational gain (Snell & Spencer 2005), and should, therefore, be publicly acknowledged and its influence accounted for.

To overcome, at least partially, some of the peer-review related concerns, our suggestions for journals in the field of biological anthropology are as follows:

- 1) The introduction of a two-way fully transparent communication between authors and reviewers, where both parties are known to each other by name. This may remove the possibility of anonymous competition-related “killing of manuscripts” (single-blind system). In addition, authors should not be allowed to name (or exclude) possible reviewers, unless the editor does not know any ones in a particular field.
- 2) Editorial boards of leading American journals, due to their global scientific impact, should consist of at least a few non-Americans, possibly non-native English speaking associate editors. In the case of non-native English contributions, the submitted manuscripts should be considered regardless of the quality of language, as long as the authors are in full compliance with existing guidelines. Decisions on acceptance or rejection of a manuscript by an (associate) editor, different from the majority of the reviewer’s recommendation, should be thoroughly considered.

3) An obligatory “conflict of interest” form regarding intellectual and personal issues for both reviewers and authors should be initiated. This has been introduced in the medical field where authors or investigators have a vested interest with pharmaceutical products or pharmaceutical companies (Buchman 2001).

4) To avoid corrupt authorship, authors should be forced to declare their specific contributions towards a manuscript as is done in leading medical journals.

5) Articles under review should be posted voluntarily on the journals’ web page (comparable roughly to the category of unreviewed “working papers” in Economics) to allow the inclusion, into the final version, of selected comments from the readership as has already been suggested Wang *et al.* (2004). Anonymous input should (for obvious reasons) be highly screened and all contributions appearing in the final paper must be fully acknowledged.

The more science is accurately outlined and presented, the more likely high quality and positive peer perception can be achieved. Science should be about the possibility of advertising fresh concepts on evidence-based results in a non-biased, open, and truthful manner with transparency the prime goal of editing such scientific discourse (Smith 2004). By raising our foremost concerns and, hopefully, by the implementation of the proposed editorial adjustments, we believe that the stated goals can be achieved, thus enhancing the peer review process in biological anthropology, and better fulfilling its true purpose. It is time “to open up the black box” (Smith 1997)!

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