CLIM1001 Individual Peer Review Reflection Piece

The peer review process is a rigorous method of assuring one's work. The process generally involves an author submitting their work to a scientific journal, which is then assessed by an editor and if successful, sent to anonymous reviewers. The editor then uses this to accept, reject or require that the author amend their article. CLIM1001 allowed us to undertake this process, with course staff taking on the editorial role, whilst students took the position of peer-reviewers. This reflection will consider the relevant merits and pitfalls that exist within the peer-review process, and propose solutions that can be implemented to support peer review as being the best process for reporting climate science.

Our peer review process went through several comprehensive phases. Phase 1 included the viewing of a Ted-talk by a renowned climate-scientist, along with the submission of our first draft, that aimed to extrapolate key ideas mentioned and find relevant research to either support or critic the talk. In phase 2, our paper was submitted to 3 different groups, with 3 papers being allocated to our group for peer review. This engaged the actual peer review process, as each group acted as a reviewer and evaluated the different papers based on their research, presentation, clarify and critical analysis on a scale of 0-4. In phase 3, each group had to revise their articles and address feedback given. The final paper was then ready for submission.

Bias remains a key issue within the peer review process, as the impartiality of the reviewer may result in unfair criticism (Haffar et. al., 2019). Consequently, the integrity and advancement of climate-science suffers when this occurs, as papers may be incorrectly adjusted or even left unpublished as a result. Such bias could occur where reviewers are prejudiced against the particular author, or alternatively against the topic of interest. Nevertheless, our peer review process helped mitigate this through being randomised, with groups being organised alphabetically, and through peer articles being allocated in this order. Had papers not been allocated, it is possible that students may have chosen articles written by their friends, which could have introduced additional bias. Although the peer-review allocation was randomised, we were still able to identify which groups reviewed our paper. Going forward, bias and conflicts of interest can be reduced through ensuring reviewers are unaware who the author is, and through allocating articles to reviewers randomly.

Another critical pitfall under the peer review process is the fact that reviewers are often not credited for their work (CLIM1001, 2019). This subsequently leads to substandard scrutiny and effort, which in turn allows improperly vetted and flawed papers to pass as credible, and furthermore weakens the argument for peer review. Additionally, according to Riley (2016), reviewers receive few rewards, little acknowledgement and minimal training. Currently, the names of reviewers may be published, free journal subscriptions may be awarded and in some instances reviewers are paid. Alongside the minimal rewards, reviews take several hours to complete thoroughly, are completed in a reviewer's spare time and are often simultaneously undertaken alongside several other reviews (Riley, 2016). This shed insight into the effort and time commitment involved in the vetting process. To address this within the course, staff marked each group on their respective peer reviews. This type of extrinsic motivation incentivised students to commit themselves, which did assist in providing some constructive feedback. The fact that students had to conduct peer-reviews alongside their own workload shed insight into this real-world process, however this was moderated through getting marked on our peer review. To improve the peer-review process, reviewers could be better remunerated for their effort and clearly recognised in each paper. To assist reviewers, Burley (2017) believes technology can automate and speed up the process.

The peer review process relies upon experts to critically scrutinize papers (CLIM1001, 2019). The issue faced within the course stemmed from the fact that students, who may have had either none or very little subject knowledge were expected to act as experts. Rather than testing ideas and assumptions, feedback was more generalised in nature and re-summarised the article review, rather than including scope for improvement. Nevertheless, course staff who actually marked the papers were there to rectify this issue. It is reasonable to assume staff were well-versed in the subject, and as such they were able to critically analyse, mark and provide necessary feedback. To address this issue,

groups could have worked with staff, or in the real world, reviewers could collaborate with reputable organisations to enhance the validity of their work. Additionally, Burley (2017) suggests that artificial intelligence may be used to help match up articles with appropriate reviewers, and suggests that investment in reviewer training should be prioritised.

I found that staff were more willing to criticise our papers, whilst in comparison fellow students were more willing to state that they were good papers. Whether this stemmed from students wanting to be kind to each other or simply not utilising much effort in the process, the end result is a reduction in the integrity of the peer review process. A proper peer review is supposed to be inherently critical yet constructive, however as a result we were wrongly led to believe our paper was perfect as is. The exception to the above is one group that reviewed our paper, who provided us with honest and constructive feedback that helped us strengthen our paper. To mitigate this again, staff provided feedback that commented on both the positive aspects of our paper, whilst also identifying how we could improve our paper. Irrespective of this, the fact that students failed to complete the peer-review as expected led to a potentially weaker paper overall, as more insights could have been gained from their unique perspectives. To mitigate this, the remuneration and recognition recommendation outlined above could be moderated by how constructive and critical the review is.

Alternatives to peer review include reviewing being a full-time occupation, however this is likely to be costly for the author, and make the spread of climate-science conditional on funding. Alternatively, Arms (2002) suggests that editorial control replace peer review, in that the editor singlehandedly reviews a paper and determines whether to publish it. Issues that arise with this method include the potential for bias, along with the lack of unique perspectives and expertise that peer review brings.

Whilst pitfalls such as those identified in this reflection exist, peer review remains a highly compelling and feasible method of reporting climate-science. This reflection identified potential solutions to the process, which include improving the reward structure for reviewers, maintaining anonymity to reduce bias, collaboration between reviewers and reputable organisations to maintain data integrity, along with the implementation of machine-learning and technology to help automate the process.

In conclusion, peer review definitely does assist in the enhancement of each paper, and at the very least, helps spread climate-science across the community. Should peer review be done diligently, it is perhaps the best method of disseminating and publishing climate science.

References:

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