



# ERIC

## RESOURCE APPLICATIONS

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## THE ILLUSORY POWER OF PEER REVIEW

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When faced with contrary views from outside the establishment the first defence of public scientists is to identify a need for peer review, and this has consistently occurred with dryland salinity. A pointed response to this position is provided in the note *Dryland Salinity as Seen on TV* on the ERIC web site. A more comprehensive response is given here.

The suggested requirement for peer review promotes the view that something cannot be right unless it is peer reviewed. It is unclear how peer review can achieve the feat of making peer reviewed material right and non-peer reviewed material wrong. Peer review is an administrative rather than scientific process mainly promoted by those that don't have the ability to make informed decisions without the support of others.

Historically scientists obtained comment from others to assist in the development of manuscripts but the content of the manuscript was the author's concern. Formal review developed with learned societies publishing material and this initially mimicked the prior situation. Today there is a publication industry where the publishers profit from research paid for by others. Copyright is claimed by the publishers and articles sold without any financial return going to those that produced the papers. The system has evolved to address commercial interests of the publications industry as reflected in the acceptable size of articles.

Journals use editors and reviewers to tailor their product to the market. For scientific journals the editor and reviewers of the papers are seldom paid by the publisher. Review activities are regarded as part of normal duties in a research organisation hence the remuneration arises from the salary provided by the employer. As the reviews have commercial implications by way of promotion for scientists, product development for industry and funding for research this produces a quagmire with legal accountability that historically has been addressed through the use of secrecy.

Many journals and most organisations funding research retain the archaic process whereby the names of authors are known to reviewers but the names of reviewers are kept secret as it is suggested this promotes honest comment. Such secrecy is now prohibited by law in the provision of personnel references because of the abuse. Also, in court expert opinion has no status unless the expert can be subject to cross-examination. The retention of such secrecy is of particular consequence for science because of the need for openness.

The way to have papers published is to support the work of the very few (usually 2) that will conduct the review. The way to have papers rejected is to present material that is contrary to that published by the reviewers. Looked at objectively from a science rather than publishing

perspective peer review is a form of censorship and it is used by some reviewers for purposes apart from addressing scientific standards.

The situation is compounded by the selectivity in accepting and rejecting reviews. The report entitled Science overcoming salinity: Coordinating and extending the science to address the nation's salinity deriving from the House of Representatives Standing Committee on Science and Innovation (<http://www.aph.gov.au/house/committee/scin/salinity/report.htm>) concluded that the rising groundwater model is not general. The submission by Land and Water Australia to the Committee identified that their main finding was that dryland salinity was more complex than previously thought where this arose because the rising groundwater model could not account for many observed situations. Scientists should be looking for alternate models but the current reaction by some is to assert that the rising groundwater model is general. They ignore independent review to the contrary and use numbers and position to claim they are right (might is right).

As publications are the main currency in public research organisations there is a penchant to publish (publish or perish). In industry the equivalent constraint is publish and be shot. For public research organisations the paperwork is deemed to be done when a paper is published. In industry the paperwork is not complete until the research is applied and produces useful results assigned value by others. The assessment of quality in industry is as it should be in science in being made by all that are affected.

The legal as well as scientific situation is that scientists have a duty of care to take all known relevant information into account. Papers cannot be dismissed simply because they have not been peer reviewed and published in a scientific journal. Similarly, results achieved by farmers cannot be dismissed simply because they have not been investigated and published by scientists. The stance being taken by scientists in insisting on peer review is contrary to normal community standards where the community standards reflect what is needed to achieve progress.

The responses of farmers in the Channel 9 program Salt Solution illustrate the consequences of public scientists using peer reviewed publication as their measure of performance. The intended beneficiaries do not believe the scientific results where they do not relate to their observations of realised outcomes. However, as the science is peer reviewed and published it is deemed by the scientists to be correct. This develops a disconnect between research and application such that the research cannot deliver the intended benefits.

This system is perpetuated by the research funding mechanisms. In the second slide of the 2005 Woods Memorial Lecture at the Shine Dome of the Academy of Science Prof. David Pannell identified that publicly funded salinity research commenced by addressing government policy and finished by providing information for government. This is an accurate representation of the situation as scientists are supporting those providing their funds. The situation was justified on the basis that between the input and output tools were being developed for farmers. However, farmers are quite capable of developing their own tools provided they are aware of what they need to address, as illustrated in the program Salt Solution.

Informed comment is most useful in the planning stages of research and in CSIRO research proposals were previously subject to considerable and sometimes over exuberant evaluation. That situation changed at least 10 years ago when the pressure to obtain external funds resulted in research activities largely being determined by funding agencies. Activities supported by external funds are not subject to normal assessment as decisions on research are being made by administrators who need not even have a science degree. Over time the administrators have

developed their knowledge from the scientists they fund and these incestuous arrangements have completed the demise of independent assessment in the development of science addressing the land environment.

This control of research by the alliance between public administrators and scientists has been detrimental to Australian science and is most evident in CSIRO and the CRCs. Science infrastructure is being demolished in the scramble for funds that are obtained by promising the delivery of practical tools. Science is being replaced by technology.

Research activities are now being determined by committees where the use of consensus promotes the status quo and suppress new initiatives. The system has developed much greater inertia than previously arose with the institutionalised 'boys club' arrangements in science as funding is now being directed to further the belief systems of public administrators and their supporting scientists. This has been disastrous for environmental science and those that the science affects. The damage extends into industry where CSIRO and CRCs view industry as sources of research funds and puppets that will unquestionably implement their results. Industry research, innovation and service delivery on the environmental has been strongly suppressed.

So what is the solution? It is certainly not the maintenance of a closed shop where a select few control what is done through secret review. It is also not in science activities being controlled by administrative committees. Review is undoubtedly needed but it should always be as open, objective and informed as possible. Everyone has a right to be heard and considered on equal terms without their work being censored.