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Responding To: *In Defense of Merit in Science*

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This commentary responds to a perspective article by a group of 27 co-authors, most affiliated to universities in the USA, with a sprinkling of international others: two each from France and Germany; one each from the UK, Australia and New Zealand; and three listing dual-country affiliations to USA as well as Israel, Germany and Australia. The perspective article claims that science is in serious danger from the replacement of merit by identity as the basis for assessments in science education, hiring of scientists, and research funding decisions. Although stopping just short of saying this 'is' happening, its purpose is to issue a warning that the future of science is under threat, if such trends were to continue. Given its relevance to science and science education in Aotearoa New Zealand, it is important for us as Māori and non-Māori to understand the claims and arguments it makes. Below, I list and discuss its key ideas, summarise its scholarly flaws, and comment on its meta-level significance in context.

Introduction

The perspective article titled *In defense of merit in science* (Abbot et al., 2023) canvasses discussions about science and its relationship with society. It refers to New Zealand as one example in its overall thesis that science is in imminent danger because of the replacement of judgements based on the criteria of 'merit' in favour of judgements based on identity, motivated by so-called CSJ (critical social justice). If this claim were true, it would be an example of idiocracy, immediately damaging to the systems and institutions of science, and with wide-ranging implications for the whole of humanity and the planet. Despite the ongoing social changes we see in the world around us, including in the institutions of science, there is no sign of imminent collapse of global science and research systems. This disjunction suggests the article's central idea is ill-founded.

This perspective article makes similar claims to those found in the infamous 2021 *Listener* letter, written by seven professors from the University of Auckland (Stewart, 2021). The *Listener* letter re-ignited the debate in Aotearoa New Zealand about Māori knowledge and its relationship with science, continuing to generate responses, both for and against (a summary of the incident and responses is found in Wikipedia, 2022). Another version was published in an online newsletter on history and philosophy of science

(Stewart, 2022). All three pieces claim to be written in defense/defence of science, implying that science is under attack. All make similar (arguably false) claims, and blame 'identity groups' including Māori for perpetrating this hypothetical heist of human intellectual heritage. Intentionally or not, these essays have racist effects, thus harming us all.

The central arguments of the perspective article are set out in its second section, titled *Merit-based science is effective and fair* (Abbot et al., 2023, p. 2), and six key statements from that section are listed below. The first three are unreferenced, presented as self-evident. The second three statements have some referencing, but, as with the article overall, referencing is slight relative to the size of the claims, and only about half the references are to academic works, the balance being to media articles and other non-peer-reviewed sources.

Key statements from Section 2

1. The scientific method has proven an effective tool for revealing objective truths about the natural world.
2. The scientific method is the core of liberal epistemology.
3. [S]cientific truths are determined by an ongoing social process that includes discussion, debate, and criticism until a broad consensus is reached (and which can be challenged by new evidence and arguments).
4. The ability of science to self-correct [is] one reason that scientific truth claims are uniquely credible.
5. These core principles, which have served us well for centuries, are under attack by ideologies originating in postmodernism and Critical Theory, versions of which reject objective reality in favor of "multiple narratives" promulgated by different identity groups and "alternative ways of knowing."
6. These perspectives often view science as a tool of power, are hostile to the central liberal principle of free inquiry and open discussion, and are closed to calls to justify their claims on scientific grounds. (excerpted from Abbot et al., 2023, pp. 3–4)

The problem with statement 1 is that contemporary philosophy of science has discarded the concept of a singular method of science (Okasha, 2016). In other words, 'the scientific method' does not exist, despite remaining in the school and tertiary science curriculum. Of course, statement 1 is true insofar as the development and flourishing of modern science in the post-Enlightenment period of European history is one of the most remarkable of all intellectual histories. Scientific methods are indeed effective for revealing

detailed aspects of the natural world. Where this idea slips from self-evident truth to reductionist distortion is with the implication that science is the *only* way of producing valuable knowledge, resulting in the second statement.

Statement 2 reduces all of 'liberal epistemology' to 'the scientific method.' This is a leap of logic from statement 1 that denies the validity of any form of knowledge other than the quantitative and measurable, dismissing all of the social sciences and humanities, along with all other forms of cultural knowledge including Māori knowledge, which is also referred to as Mātauranga Māori. Statements 3 and 4 describe conventional characteristics of science, but omit to mention that these are ideals, which are not necessarily reflected in the real world of working science and resesarch.

Statement 5 is a dubious assertion, yet presented as if self-evident and undeniable, like the previous four statements. It misrepresents key commitments of postmodernism and critical theory, as further discussed in the following section. It asserts that 'ideologies' are attacking the previously stated principles of science, and suggests that 'multiple narratives' and 'alternative ways of knowing' are gaining ascendancy over science knowledge. Statement 6 attributes more 'ideas' to the above 'perspectives'—though it is difficult to understand what it means to say that a 'perspective' has opinions, and takes positions on questions of knowledge.

The rest of the article delves further into the basic argument established by these six key statements, so the errors in these statements also invalidate the article as a whole. It is useful to highlight a few examples from later sections, but unnecessary to refute every sentence of the text in order to be able to say that, in its entirety, it is highly flawed, and a prime example of poor scholarship of a certain type, published under the flag of 'defending science' (Clements et al., 2021; Corballis et al., 2019). As the authors recount, it is not publishable in a typical research journal, meaning one of the quality in which academics in New Zealand universities are expected to publish (journals with a good reputation, and public policies for editorial ethics). Like most flawed scholarship, the perspective article contains untruth mixed in with truth, which gives it a surface appearance of credibility, and can be difficult to untangle. It is therefore useful to unpack and explain its scholarly flaws.

Scholarly flaws

This section identifies and summarises some flaws the article contains, and how they inter-relate.

1. False claims about science

These include the claims set out above, including the false claim of the centrality of a singular scientific method, and the illogical extension to the idea that science is the only valid form of human knowledge. In addition, embedded in the perspective article is another kind of false claim about

science. The single seven-letter word 'science' includes a vast range of activities, ideas, topics and phenomena. Yet in essays like the perspective article, it is common for 'science' to be discussed as if it were one coherent, homogenous whole. This portrayal ends in asserting the primacy of the scientific method, and over-inflating science's importance relative to all other forms of human knowledge, discussed above as the problematic aspects of Statement 1 and 2.

2. False claims about postmodernism and Critical Theory

Postmodernism and Critical Theory are oriented towards improving science, not attacking it. There is heavy irony in the symmetry between the scholarly 'sins' of which the co-authors accuse their opponents, and those they are themselves committing. The unwillingness of the co-authors to consider 'critique' as an opportunity for learning seems at odds with the basic criteria of science. The key false claim the article makes about postmodernism and Critical Theory is that these traditions encourage the belief that there is no such thing as objective reality, in terms knowable to science. If this claim were correct, it would indeed be inimical to the central mission of science, but it is simply false. Postmodernism and Critical Theory (to continue to use the wording favoured by the article) refer to a constellation of traditions of critique of modernity that began to coalesce in the 1900s (although precursors always existed, this is when these terms arose in mainstream philosophical and research literature), gathering pace following the end of WWII. Postmodernism and Critical Theory are attempts to right the original 'Faustian bargain' made by science in its embryonic phases in the early modern era, when it was separating from the authority of the Church and State. The idea was that science would stay out of politics by declaring itself 'value-free' – a fallacy that continues to confuse scientists, and taken to an extreme results in innocent tracts such as the perspective article (Proctor, 1991; Putnam, 2004).

3. Straw man argumentation

A 'straw man argument' is the logical fallacy of presenting an extreme version of an idea one opposes, then attempting to dismiss the idea by dismissing that extreme version. This description fits the approach taken in the perspective article. Straw man argumentation is a form of 'bad faith scholarship' because the writers are not understanding the ideas they are reviling and accusing of trying to bring down science. The principles of science are contravened by the straw man argumentation displayed in the perspective article.

4. Black and white thinking

The term 'black and white thinking' is one expression of binary thinking, which is the logical fallacy of dividing the world or field of study into two camps, for and against the idea in question. Black and white thinking inevitably over-simplifies the complex social world, and has negative effects

on the quality of knowledge produced. The article displays black and white thinking in the tendency to line up each commentator on one side or the other of the presumed attack on merit in science.

5. Presentism

Presentism is the denial of the role of the past in producing the present social conditions (Crisp, 2005), and an example of agnotology, or the practice of ignoring inconvenient truths (Salecl, 2020). Although the perspective article acknowledges past practices of systemic exclusion of 'various groups' from science, these are minimised as aberrations rather than acknowledged as standard practices.

> Indeed, scientists have not always lived up to the ideals of fairness and impartiality in evaluating merit. In the past, scientific culture contributed to the exclusion of various groups from the scientific enterprise. For example, sexism limited women's entry into science, and those who helped raise awareness of such issues have done science a service. (Abbot et al., 2023, pp. 4–5)

Given how exclusionary practices are facilitated by the central tenets of science, such as universalism and the notion of being value-free and culture-free, it is reasonable to suggest that these characteristics are typical and normal in science, not aberrations. The debates between science and society are nuanced and more about relative balance between various interests, rather than, as portrayed in the perspective article, a zero-sum, good versus evil mentality. Presentism is one fallacy that contributes to the article's scholarly weakness.

6. Rejection of social justice

The co-authors express their ideas about the "genesis of the current attacks on merit-based science" (p. 9) in no uncertain terms:

> The ideological basis of the current attacks on science emanates from certain veins of postmodernism and the identity-based ideologies they have spawned: various CSJ [Critical Social Justice] theories, including Critical Race Theory (CRT), related theories of structural racism, and postcolonial theory. (Abbot et al., 2023, p. 9)

To include the softening words 'certain veins of' does not relieve the co-authors of an ethical burden incurred by publishing this counter-intuitive assertion. The co-authors follow their false trail as far as blaming the aim of *social justice* for the imminent threat to science they imagine they have identified. This point exposes the departure of the article from common sense. It is difficult to understand how this large group of senior scientists

agreed to collectively vilify the aims of social justice, and blame social justice for attacking science. The only possible answer is by lack of adherence to the tenets of logic and diligence in scholarship.

7. Preaching, but not practising

Towards the end of Section 2 of the article, the co-authors cogently argue that instances when ideology produces poor results have no impact on reality:

> Whether sexism prevented Cecilia Payne-Gaposchkin from receiving credit for her conclusion that the Sun was made mostly of hydrogen is irrelevant to the fact that the Sun is made mostly of hydrogen. (Abbot et al., 2023, p. 5)

By this reasoning, it is equally invalid for the co-authors to enumerate examples of statements that they see as attacking science, as in the longest section of the article (Section 6, titled *Exhibits of the Intrusion of Ideology into Science and Attacks on Merit*, pp. 11-18). No matter how many *bad* articles are published about science and racism or colonialism, it does not alter the evidential chain of links that connect modern science to violence of all kinds (Falk, 2005). Science is not only in thrall today to war and big business, it has been used for centuries to justify physical and ideological violence against people of colour, indigenous and colonised peoples, women, animals, and anyone or anything that represents Nature. These links, and any examples of the harms done by science, are omitted from the triumphalist image that is presented of science in textbooks and public discourse. Judging by the perspective article, and a veritable tsunami of similarly poorly-conceived writings, scientists seem to be more susceptible than others to the lies-by-omission and partial truths that help make up the public image of science (Proctor & Schiebinger, 2008).

8. Moral panics and folk devils

The article blames "different identity groups" (Abbot et al., 2023, p. 3) for attacking science by seeking to replace scientific merit by identity criteria. This assertion fits the description of what Stanley Cohen first coined a 'moral panic' in his classic study of the Mods and Rockers, two British youth subcultures in the 1950s-1960s (Cohen, 1972). Cohen also invented a second original concept he coined the 'folk devil,' complementing his first inspired notion of a 'moral panic,' because if society were under threat, it would be necessary to find and blame the perpetrator(s). A 'folk devil' is an imaginary enemy of society, conjured up by those who spread a moral or false panic. In the current example of the perspective article, the co-authors cast 'different identity groups' and those who believe in postmodernism, Critical Theory and Social Justice as the 'folk devils' responsible for the attack on science. The sense of intellectual beseigement is palpable. It is difficult to imagine

how a rational level of debate might be established with people who are so committed to a false reality. The fact that it is scientists who are caught up in this conspiracy theory is the actual danger and warning for science.

The next section considers the article's relevance to current debates in New Zealand, particularly within the science departments of our national universities. It first looks at the reference to New Zealand, then comments on weaknesses in the article's short final section.

Significance of the article in context

The false trail on which the co-authors set out leads them down the path of black and white thinking. Because they have wrongly assumed that postmodernism and Critical Theory are, on principle, aiming to 'bring down science' (whatever that might look like), then any group sympathetic to these ideas is also vilified. Following this false reasoning leads them further down the garden path to denounce (what they think is) postcolonialism and related ideas such as decolonization and critical race theory (CRT), including New Zealand and Mātauranga Māori in their sweep of examples of the dangerous 'politicization' of science. Here is their paragraph about New Zealand:

> Decolonization is already a reality. For example, in New Zealand, decolonization of the sciences by adding the mythological content from Mātauranga Māori to the science curriculum is now actively pursued throughout schools and universities with the support of the government, and any criticism to this is termed racist. (Abbot et al., 2023, p. 12)

By lumping together and denouncing a false idea of what is actually happening, the perspective article casts aspersions at the efforts being made to ameliorate the effects of widespread and fundamental racist ideas and histories that have produced the current inequities for Māori in science and the academy at large (Hoskins & Jones, 2022). Like a distorted mirror, the article reflects a scarily plausible inversion of facts and motivations, leading it down the absurd path of denouncing the idea of social justice. Only two references relating to New Zealand are cited to support the strong claims made in the above quote: one being the recent manifesto by Tara McAllister (2022) titled *50 reasons why there are no Māori in your science department*; the other a blog post by an international traveller (Krauss, 2022). There are vast scholarly literatures on the relevant issues from local perspectives in New Zealand and Aotearoa, including my own publications and those who have inspired me, such as Moana Jackson (1992) and Linda Tuhiwai Smith (2021), so the use of just these two pieces points to a scholarly lack of care.

Finally, the article's one-paragraph Afterword section (p. 20) contains some examples of faulty reasoning. In the text and a long footnote, the Afterword gives an account of the struggle to get the article published, and how it was rejected by "a prominent interdisciplinary science journal" and "several

other scientific journals" (Abbot et al., 2023, p. 26, footnote 147). It takes a breathtaking level of hubris to see rejection by one's field as evidence that the field is wrong and one is right. This response defies the scientific principle of consensus as establishing truth, listed prior as statement 3.

It notes the recent appearance of two national US reports:

- Office of Science and Technology Policy of the White House released a 14-page vision statement outlining the priorities for the U.S. STEMM ecosystem (White House, 2022);
- National Academy of Sciences released a report titled "Advancing Antiracism, Diversity, Equity, and Inclusion in STEMM Organizations: Beyond Broadening Participation" (National Academies, 2023).

The first of these two reports is criticised because it does not contain the word 'merit' in its pages, but this fact alone about a single word does not constitute a valid critique. There are many different vocabularies in which educational discourse can take place, and the qualities the co-authors are summarising as 'merit' may well be in the report. Absent of a critical scholarly review of the whole report, to mark the absence of a single word is a meaningless accusation, illogical in terms of the norms of qualitative research. The co-authors note that there is a current debate over the word 'merit' in the USA, but that is a local debate with a specific history, which is not occurring in the same terms elsewhere including in New Zealand.

About the second report, the co-authors express concern over the fact that it:

> describes merit as a nonobjective, "culturally construed" concept used to hide bias and perpetuate privilege, refers to objectivity and meritocracy in STEMM as myths, and calls for meritbased metrics of evaluation to be dismantled. (Abbot et al., 2023, p. 20)

But here the co-authors are objecting in strong terms to a sentence in a report, rather than to any empirical data, thereby transgressing their own stated standards for evidence. This quote comes from a report by NAS (National Academy of Sciences), the peak body for science in the USA, which is hard to square with their accusation that "different identity groups" are behind the replacement of merit by identity criteria in regimes of assessment in science. As the authors note themselves, such rhetoric is often more symbolic than 'real' as understood, perhaps, in terms of monetary investment. Yet they do not apply this insight to their own scholarly strategies on display in the perspective article.

Conclusion

As already noted, *In defense of merit in science* has a surface appearance of being a credible and informed commentary, perhaps even authoritative. Its flaws may not easily be discerned by scientists who lack familiarity with the traditions and ideas it vilifies—postmodernism and Critical Theory, decolonization and Indigenous Knowledge. The mere fact of its existence works to discredit efforts to overcome systemic inequity in science for disadvantaged populations including Māori. In this way, and against the professed sympathy of the authors for members of subjugated social groups, this article, despite lacking scholarly credibility, has negative effects on Māori/Indigenous interests. The ignorance of the pro-science lobby, on full display in this article, is a more serious locus of danger for the future of science.

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