

REPLY

## Te kupa whakamutunga

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At the outset, I wish to also acknowledge that due to my expertise lying within the sociology of education field I have attempted to remain in my own theoretical domain as well as reflect on the issues from a Maori viewpoint. As McKinley has rightly noted, this stance has both advantages and disadvantages with respect to the wider discussion of constructivism within science education. The main thrust of the paper was concerned with issues pertaining to Maori and science. Two important features emerge here. One is the development of more Maori academics to the point where we now have specialists in particular areas rather than generalists (who have been expected to be 'the expert' on all things Maori) as has often been the case in the past. The other feature, disappointingly, is the taken for granted assumptions which continue to be dogmatically upheld by some scientists; that science and its practice are essentially neutral, apolitical and acultural.

Liz McKinley raises two key points in her commentary. Firstly, that I have been lenient in my criticisms of Matthews and that secondly, as someone who is more aligned with sociological traditions, I do not develop a sufficient interrogation of the complexity of issues related to constructivism in Science Education. The tenor of my response here, is not so much to be defensive about the critical points raised, but to agree with her and to attempt to explain why things have ended up as they have. Indeed, from the sociological point of view, the exercise of conforming to the expectations of what counts as a valid science article is in itself, symptomatic of the contradictions implicit within science as a discipline - the false consciousness that science is neutral and value free, that science is reducible to a set of facts, and that science exists as natural phenomena outside of social experience.

On the first issue of being overly lenient towards Matthews there are several points which I would raise for consideration. I am concerned to avoid seriously engaging Matthews with respect to his claims about Maori and science other than to dismiss them as being ill-founded with respect to the criteria of *what should count as valid research and evidence* even by the standards as defined within the discipline of science itself. I feel it inappropriate to privilege such poorly established arguments with a serious academic response. Neither do I wish to expend time and energy in a reactive way responding to an agenda which has been set by someone who seemingly does not even realise the full scope of the issues or indeed understands the import of the issues related to the wider societal context of New Zealand. The criticisms I have raised previously with respect to the use of virtually no Maori authored sources, the very short contact with New Zealand and very little contact with Maori while here should be damning enough to fellow scientists.

It is a moot question as to whether Michael Matthews' research and comments on Maori and science are indeed ill-informed or whether he is acting mischievously to serve the interests of the neo-conservative *Education Forum* (who have assisted in the funding of his 1995 book) or the New Right inspired interests of *The Business Roundtable*. The political consequences of his claims for Maori are far reaching and increase the potential for the assimilation of minority Maori by dominant Pakeha interests. Matthews' (1995) critique of Maori has also contributed to discourses attacking the validity and legitimacy of Maori language, knowledge and culture. Beyond this, such claims as

exemplified in Matthews' book (1995) assist in the destabilising of Maori attempts to be taken seriously in their own country and lends support to those seeking to undermine the Treaty of Waitangi and subsequently Maori rights and claims within Aotearoa (New Zealand). Within the new economic framework, the Treaty of Waitangi provides a major political barrier to the privatisation of state assets and the full installation of the free market. Libertarian adherents such as the Education Forum and The Business Roundtable would like to rid the market of the Treaty in order to allow an open and unencumbered entry into the global free market place such as that represented by the GATT (General Agreement on Trade and Tariffs). While correlations between Matthews' comments on Maori and science with wider societal implications may seem farfetched, it ought to be clearly understood that research is not produced or reproduced in a political vacuum and that there are always wider repercussions. In this sense it is naive to think that any research is an apolitical and neutral activity. Thus Matthews' apparently *innocent* research does have real impact and real effects on Maori people.

It is difficult to understand what the motivation might be for Matthews to act in this way against Maori, notwithstanding his association with The Education Forum as noted before. On the other hand, perhaps he has simply been ignorant of what the implications of such research might be for Maori and any negative consequences that may ensue are unintended. However I make the above points to illustrate the full extent of what has been put at stake for a race of people as a consequence of research carried out by an individual from another country! The point is that researchers have an ethical responsibility to be accountable to the groups whom they are researching with respect to academic rigour and accuracy.

Finally, I would emphasise that Matthews' attempt to question the extent to which constructivism may or may not deliver for learners of science in New Zealand schools is a useful and important one from the perspective of Maori learners. It is the sorry history of policy failure in respect of intervention into Maori educational and schooling crises which has developed a growing and urgent need for the critical interrogation of liberal, well intentioned policy ostensibly designed to work in the best interests of Maori.

McKinley's second critical point relates to the *fish out of water* charge with respect to an educational sociologist writing in the science education domain. While McKinley identifies (and simultaneously reproduces) overtones of a territorial demarcation between the theoretical positioning between science and sociology as different disciplines, it should be clearly understood that there is another macro-level to this debate which extends beyond the confines of the disciplines of science and sociology and which connects to the wider societal context of Aotearoa. It is at this macro level where I am personally implicated as a consequence of being Maori. The issues related to Maori raised by Matthews moves the science education discussion beneath the superficial realm of merely talking about school knowledge and pedagogy to deeper questions related to the validity and legitimacy of Maori knowledge and by extension Maori language, culture, identity and race. At an even more submerged level again, disproportionate numbers of Maori, despite being tangata whenua, despite having a *Tiriti o Waitangi* contract, are educationally, socially, economically and culturally marginalised within New Zealand society generally.

The discussion about Maori developed by Matthews (1995), or any others, cannot be simply confined to constructivism. His analysis, whatever his intentions, was always open to being (mis)interpreted by Pakeha and Maori alike within a set of broader politics of unequal and contested power relations.

Consideration of this wider context poses an immediate problem for science education in its theory and practice (although constructivism within science education makes some claim to redressing this at the pedagogical level). In general, science tends to operate in ways which de-emphasises the wider political, social, economic, historical and cultural contexts from which a learner may have emerged. In this sense the critical questions deriving from Young's (1971) challenge of school knowledge provide a significant point of challenge to this perspective.

- what counts as knowledge?
- whose interests are served by Knowledge?
- do different groups within the wider community value different forms of knowledge?
- how is such knowledge evaluated?
- what ideological appeals entrench such knowledge?

Put another way a crucial question to be asked of science education and indeed constructivism is whether the debilitating influence of these wider contextual factors are sufficiently controlled for so that learning by Maori is able to be enhanced.

As a final point, I would emphasise that Kaupapa Maori theory is not simply a new way of doing things which should inform science education. It also provides the critical theory matrix by which the success or otherwise of any strategies which claim to impact on Maori learners, ought to be measured. In these terms, Kaupapa Maori brings together critical theory and critical pedagogy as praxis. It is this critical mixture which I argue, provides both a framework for transformation as well as an appropriate index by which to measure the effectiveness of new education policy both for and by Maori.

## References

- Matthews, M. (1995) *Challenging New Zealand Science Education*. Palmerston North: Dunmore Press.
- Young, M. (Ed) (1971) *Knowledge and Control: New Directions for the Sociology of Education*. London: Collier McMillan.