

## **Academic Activism in STEM fields: Discipline in Theory and Practice**

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When theorising academic activism, the role of disciplines and their associated tribes and territories need to be considered (Trowler 2001). There are fundamental differences in notions of objectivity and neutrality and the approach of positivism and interpretivism in Science, Technology, Engineering and Maths (STEM) fields versus the Social Sciences and Arts and Humanities, although nuances play out both within and across disciplines. These orientations impact how activism is conceptualised across disciplinary contexts and put into practice for staff, students, and the wider public.

Positivism asserts that knowledge is obtained through observation and empiricism. Many STEM fields, particularly Maths and Physics, seek universal laws and patterns and convey an approach of the purity of science. This theoretical foundation blends into the disciplinary culture which portrays science as inherently fair. This can lead to a separation of the 'academic' and 'activism', with the neutrality of the discipline unquestioned. For students, the assumed neutrality of STEM disciplines can reinforce inequalities of outcomes, positioning these as individual rather than systemic. However, policy analysis in higher education shows gender and ethnicity gaps in student access and attainment and in staff hiring, progression and outputs, indicating a lack of fairness, equity and equality across disciplines.

This agency is further shaped by national context—what are the public roles, responsibilities and rights, of academics generally and STEM academics in particular? Are they placed in an ivory tower removed from public life, or more actively positioned as shaping society? In the global context, the perceived neutrality of STEM furthers modernisation agendas, but it also raises questions about the role of academics who might be required to tread narrow pathways of state-sanctioned academic freedom, or to be constrained by the rewards and recognition offered by the 'traditional' tripartite academic role of teaching, research and service. Activism may be more embedded in the disciplinary praxis of social science, with more explicit links between research and societal impact. There is a danger that in STEM fields activism is seen as an additional, extra-curricular activity for academics and their students, disadvantaging those engaged relative to their discipline-focused peers.

However, the positivist foundations of STEM fields also provide an avenue for embodying 'academic activism'—through the use of data in identifying inequalities and triggering action. In England, this line of activism has led to wide-scale changes in research funding (i.e. Athena SWAN), regulation and student recruitment. Part of the role of academic activism thus becomes identifying and addressing gaps in the data. Further, activist approaches in STEM fields, such as design engineering, can address how inequalities are built into the structure of society.

While the role of higher education as a 'public good' has been well defended, the debate focuses on either the sector as a whole (Marginson 2011), or individual commitments to "shared understandings and collective action" to enable transformative social change (Nixon, 2011, p.120). The impact of disciplinary cultures on academic activism is, as yet, under-developed. We argue that further scrutiny of the way STEM disciplines are positioned as neutral in the national, cultural and individual imaginary will unveil a range of assumptions about the disciplinarity of academic activism within, across and through higher education.

Marginson, S. (2011). Higher education and public good. *Higher education quarterly*, 65(4), 411-433.

Nixon, J. (2011). *Higher education and the public good*. New York, New York, Continuum international.

Trowler, P. R. (2001). *Academic tribes and territories*. McGraw-Hill Education (UK).