

Hodson, M., and Marvin, S., (2004), *Opening the 'Black Box' of the Hydrogen Economy*, UKSHEC Social Science Working Paper No. 2, SURF Centre, University of Salford. A revised version is now in press in *Energy Policy* (abstract only).

Abstract

This paper addresses a partial but powerful view of the hydrogen economy known as 'technology characterisation' (TC). TC offers particular representations of the supply of hydrogen technologies through 'measuring' the 'state of the art'. This view is seen as an important means of generating political and policy support for technological developments through outlining technical 'possibilities' and 'options' in relation to 'costs'. Through drawing on 10 TC documents a series of practices and issues are outlined. These documents are subjected to critical interrogation as a means of saying not how TC *should* be applied but in outlining how it often *is* applied. Our analysis of these documents claims that TC conceives of technological change through a process of narrowly framing understanding of what 'relevant' costs and technological possibilities are. We claim, through this critique, that this dominant way of narrowly characterising technological change in terms of the supply of technology would benefit from an appreciation of alternative 'ways of seeing' the development of hydrogen technologies, particularly in relation to 'contexts' of their appropriation, consumption and development. We suggest that this can be done through the development of two alternative ways of seeing: a Large Technical Systems approach which addresses wider systemic considerations, and localised 'niche' developments in nurtured spaces of reflexive social learning. Through subjecting the practices of a dominant way of seeing technological development—TC—to critique this opens up the possibilities for TC practitioners to reflect on the strengths and shortcomings of their own practices. This, in addition to outlining ways of seeing the appropriation and innovation of hydrogen technologies in specific contexts, through an LTS and niche approach, offers the potential for a dialogue between the supply and the contextualised appropriation of hydrogen technologies and thus for engaging disconnected areas of research. It also provides a basis for research which opens up the possibilities for sensitising policy interventions to contexts of appropriation and use in addition to Technological Characterisations of supply