A New Paradigm for Design and Technology Education?

Williams, P.J. and Stables, K. (eds) (2017). Critique in Design and Technology Education. Singapore: Springer Nature.

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One might expect a book exploring critique to intrigue, baffle, irritate and reassure in roughly equal parts, and Critique in Design and Technology Education does not disappoint on that measure! I have titled this review 'a new paradigm', with the question mark acknowledging that it has had a place from the beginning of the subject in England and Wales (cf DES and WO, 1988), albeit largely eclipsed by designing and making. It could just as well be thought of as indication of a coming of age.

> "Our view is that such practical involvement is fundamental to an education of this kind. There is, however, an additional dimension to consider and this entails critical reflection upon and appraisal of the social and economic results of design and technological activities beyond the school... Furthermore, technological revolutions are irreversible; no technological change can be uninvented after it has taken place. We need to understand design and technology, therefore, not only to solve practical problems, to invent, optimise and realise solutions, but also so that we can acquire a sense of its enormous transformatory power." (DES and WO, 1988, p.5)

Critical analysis and evaluation has been a theme running through successive English and Welsh National Curriculum programmes of study; from critical thinking implied in the "satisfying needs and addressing opportunities" section in the first programme of study (NCC, 1990, p.31) to developing "a critical understanding of its impact on daily life and the wider world" in the current purpose of study (DfE, 2013, p.1). Arguably the gradual shift in focus in the National Curriculum and classrooms from artefacts (cf NCC, 1990) to products (cf DFE, 1995 to present) drew attention to objects rather than impact. 'Critique in Design and Technology Education' provides a theoretical starting point for educators and researchers in the subject to reflect on the role and nature of design and technology in the curriculum.

For readers unfamiliar with critical theory, it may be helpful to borrow a quote from Steve Keirl's chapter, 'Critiquing as Design and Technology Curriculum Journey, History, Politics and Potential' regarding the inherent assumptions and perspectives, an overt theme through the book and congruent with its aims:

> "Critical theorists begin with the premise that men and women are essentially unfree and inhabit a world rife with contradictions and asymmetries of power and privilege. The critical educator endorses theories that are, first and foremost, dialectical; that is, theories that recognise the problems of society as more than simply isolated events of individuals or deficiencies in the social structure." (McLaren 1989/2009, p.61 in Keirl, 2017)

The authors present a wide range of perspectives around design and technology activity stretching and challenging in roughly equal measure; thus espousing the ideas of critical theory. Some chapters may stretch the reader's understanding of the nature of design and technology, and its influencing factors, including philosophical (de Vries, pp.15-30) and spiritual (Petrina, pp. 31-49). Others take you deeper down the "rabbit hole" of design (Spendlove, pp. 71-86; Stables, pp. 51-70) with contemporary thinking on design thinking and education. Whereas, for western readers, Gumbo (pp. 87-105) challenges assumptions and bias, presenting an alternative perspective of technology and design and technology education through the lens of "indigenous knowledge systems". And this is just in Part 1, setting "The Basis of Critique" (Williams and Stables, 2017, pp. 15-105)!

In Part 2 the authors guide the reader in critiquing aspects of design and technology education, bringing their particular pedagogical and research interests, expertise and experience. Keirl (pp.109-134) invites the reader to view curriculum development through a lens of critical theory, with practical insight for design and technology in Australia. Williams (pp. 135-152) considers the nature and importance of critique as a disposition, inextricably linked with intentional action, whilst recognising the challenges assessing it as a component of design and technology activity. Nicholl (p.153-172) and Ginestié (pp. 193-212) consider societal factors, with Nicholl espousing inclusive design and Ginestié reflecting on the technology education curriculum in France. McLaren (pp. 173-192) speaks into teacher education and teacher reflection, acknowledging the "complex and messy" nature of critiquing (p.190).

Part 3 moves towards application of critique, Seery (p. 255-274) developing the central theme in design and technology of modelling, reframing it as a form of critique. Barlex (p. 215-236) takes the relatively new idea of disruptive technologies, such as additive manufacture and the Internet of Things, providing frameworks to support critique through product life cycles, scenarios and narratives. Wilkinson (p. 275-300) applies critique to the product lifecycle and the implications for education, whereas Axell (p. 237-254) takes critique in design and technology into children's literature and technology, a notation that secondary teachers may find novel and can learn from multidisciplinary practices in primary classrooms. In closing the section, von Mengersen (p. 301-320) considers critique as a signature pedagogy in design and art, and the "perceived dichotomy between 'making' and 'knowing'…" (p. 306).

In reading this book, I repeatedly found myself starring into space lost in thought and only a few paragraphs into a chapter; so encourage the potential reader to allow time to read-think-reread-repeat. This is an essential read for the thinking design and technology teacher, teacher educator or researcher. Prepare to be challenged. Prepare to be bamboozled. Prepare to think. But read it nonetheless.

Williams and Stables' (2017, pp. 1-12) "…About the Book" introductory chapter provides an excellent and detailed synopsis of the book and summaries of themes and chapter content, which is available online.

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