

Values in Design and Technology: an Anti-Racism Dimension

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David Layton's paper on Values and Design and Technology provides an account of the principal agents that have been involved in the socio-political shaping of school technology.¹ In addition to the economic functionalist, professional technologist, women, sustainable developer and liberal educationalist stakeholders that he identifies, this paper seeks to contribute towards the further introduction of a sixth force, one informed by an anti-racism perspective.

The 1988 Education Reform Act² requires schools in England and Wales to provide:

... a balanced and broadly based curriculum which:

- (a) promotes the spiritual, moral, cultural, mental and physical development of pupils at the school and of society; and
- (b) prepares such pupils for the opportunities, responsibilities and experiences of adult life.

The National Curriculum Council (NCC) curriculum guidance³ suggests that all teachers should therefore accept the responsibility of providing an education for life in a multicultural society. This cross-curriculum dimension, it is argued, is to permeate the whole curriculum and is intended to:

- extend pupils' knowledge and understanding of different cultures, languages and faiths
- value cultural diversity by drawing on pupils' backgrounds and experiences
- offer positive images and role models from all cultures. (NCC, 1992)

As the NCC publication *Curriculum Guidance 3: The Whole Curriculum* (1990) states:

... introducing multicultural perspectives into the curriculum is a way of enriching the education of all our pupils. It gives pupils the opportunity to view the world from different standpoints, helping them to question prejudice and develop open-mindedness.

This paper provides a critical review of the guidance currently on offer to those teachers of technology who wish to implement these aspects of the National Curriculum. While many of the arguments contained may be considered relevant to gender and other technologically marginalised groups, and to other countries, in the interests of clarity this paper restricts its concern to the issue of values in technology education as they relate to the provision of racial equality in the UK.

■ Equality and Underachievement

As John Eggleston has suggested⁴ there is an urgent need to address the problem of the underachievement of black pupils in design & technology classes: ethnic disadvantage in

access to examination classes and examination success seems, in many if not most schools, to be just as marked in Design and Technology as it does in the others. Eggleston argues that, before we can solve this problem we need to understand the sources of the powerful social pressures that have, for generations, differentiated technological achievement by race (and gender). In reviewing the evidence, Eggleston points to the tragic consequences of stereotyping and the unintentional racism of teachers who do not challenge the popular assumptions surrounding the motivation, behaviour, language ability and cultures of their black pupils.

According to Eggleston, this process is likely to be further exacerbated in design and technology classes where teachers are anxious to recruit pupils considered academic and of high status to their newly enhanced high status courses. Eggleston points to the need for schools to inform and work closely with parents in improving access to courses and in exploiting the opportunities for multi-cultural technology education inherent in the National Curriculum Technology Orders. Eggleston cites the ASE publication *Race, Equality and Science Teaching: an active INSET manual for teachers and educators*,⁵ as a valuable resource, and the ASE sister volume, *Race, Equality and Science Teaching: a Teachers' Handbook*⁶ has now also been published offering more useful guidance.

Much of the writing on racial equality in science education offers a valuable source for the understanding of issues associated with access and achievement, teacher expectations and attitudes, pupil encouragement and self-image, racial prejudice and discrimination (Rattansi⁷ for example, and Siraj-Blatchford⁶ and Reiss⁸). Such concerns, and strategies such as the provision of positive role models and relevant non-stereotypical curriculum experiences, clearly apply equally to design & technology.

Unfortunately, the growing literature on anti-racism and science education has yet to be followed by an equivalent treatment of the issues in design & technology. While writing on gender issues predate the Girls into Science and Technology (GIST) Project (1980-84) racial equality remains relatively neglected. The treatment of the subject is also, thus far, restricted to a narrow concern with the underachievement of black pupils in

■ Notes

1. This is an edited version of a paper first presented at the International Conference on Design and Technology Educational Research and Development (IDATER 93) at Loughborough University of Technology.
2. The term black is used advisedly to refer to those sharing a common experience of racism; in the UK these groups are most commonly of African-Caribbean or South Asian origin. The term is thus a political category commonly used in the UK race relations field.

technology itself, and has failed to respond to the challenge of the 1988 Education Act to apply racial equality across the curriculum.

■ Values

David Layton^{1,9} has argued that the consideration of values should be central to education in design & technology. He provides a clear account of the key strategies that have been, and continue to be, employed to resolve value conflicts in technology, and as he argues, value conflicts often result in winners and losers, and technologies are often *imposed*. It must be remembered that the technology curriculum is as much defined by the exclusion as by the inclusion of content. In choosing *not* to consider certain aspects of the subject we are taking political and moral decisions that will influence our pupils' understanding of the subject and of their role within it. As Layton¹ argues:

The politics of technological literacy — who creates and controls the meanings of the phrase, how the imposition of meaning is achieved — is a central concern of technology education today and is inescapably rooted in value considerations.

He also recommends the use of four perspectives that teachers may apply to bring values into prominence, which involve the recognition that:

- 1) technologies are successful when the values embedded in the design are congruent with the dominant social values of the consumer culture
- 2) conversely, technologies become obsolete when the values that are embedded in them are no longer congruent with society
- 3) technologies transferred between cultures often result in the rejection/radical adaptation of the technology or else the often damaging transformation of the society
- 4) for all of the above reasons we must be aware of the distinctly gendered moral orientations of men and women, boys and girls.

Layton usefully cites the work of Goonatilake¹⁰ and David Nobel¹¹ and argues that 'There is nothing inevitable about the form which a technology takes; it is shaped by the value decisions of those in control'. He also suggests that the National Curriculum opens

the way for critical reflection not only on all aspects of pupils' own work but also on the value options and decision processes which have empowered technological developments in the past and which are doing so today.

Layton argues that there is a need to make values the subject of deliberation and critical reflection between pupils and between pupils and teachers. One might add that there is still an urgent need to encourage this process between all of those involved in the development of technology education.

■ Technological Racism

Technology education represents more than just another valid sphere for anti-racist practice. Technology lessons provide more than merely another context in which black and ethnic minority students are disadvantaged. Our treatment of science and technology in schools and in the wider media has provided a major, if not *the* major support to racist ideologies. Racism occurs when the application of prejudiced (albeit often unconscious or unintentional) attitudes lead to discriminatory actions. Many, if not most of our white population, still believe themselves to be culturally superior to black people. Our pupils' common sense (yet totally mistaken) everyday observations confirm their prejudices: they see relative poverty and infer inferiority, and it is the basis of these fundamental prejudices that need to be challenged.

These are not the overt racist attitudes cited by Eggleston (the teacher who tells the boys to get down off the banana trees to continue their work or the girls to cover their grass skirts). These are the sort of attitudes reflected in Gordon Taylor's *Salute to British Genius*¹² where he writes:

The British are a remarkable people. In proportion to our population we have arguably contributed more to the advance of the world than any nation since the Greeks — and in the modern world our contribution is absolutely greater. This is a fact which we are in danger of forgetting. A generation is growing up which has little knowledge or appreciation of its extraordinary history. This is tragic, for a sense of history is the foundation of culture.

Clearly the culture envisaged by Taylor is a mono- rather than a multi-cultural one, although Taylor's concern does have a more global dimension, as he goes on to argue:

Foreigners, too, frequently have a distorted picture. It is not only that they think of England as a land of fogs and are amazed when the sun shines; often they think of us as a nation which has grabbed, a ruthless imperialist power, and know little of what we have given to the world.

It is perhaps significant that the very first example provided by Taylor in this celebration of British Genius is the electric light bulb:

... the year 1877 was a particularly productive and interesting one ... Joseph Swann, with his assistant C. H. Stearn, renewed his long abandoned efforts to produce a practical electric light bulb: he succeeded within a year, thus launching electric lighting as we know it, and thereby the whole electricity industry.

While some may be puzzled, having read other accounts of this invention that attribute the development of the electric lamp to the American Thomas Edison in 1879, it is instructive to note that the first person to actually obtain a patent for a practical lamp (that is with a filament held by supports in an evacuated bulb), that made electric lighting a really practical alternative to gas, was Lewis Latimer, and that was in 1881. Latimer was an Afro-american, the son of a runaway slave. He fought in the Union Navy during the civil war and produced his system for mounting filaments in evacuated bulbs while he was working for Maxim, the inventor of the machine gun. Amongst many other projects undertaken, Latimer came to Britain and supervised the manufacture of carbons and the installation of lighting in London in the late 1870s.¹³

Contemporary historians are familiar with such whiggish accounts of history, written to justify particular societies and social groups, as such accounts have been common in the past. In case we should be in any way doubtful regarding the composition of the British society that Taylor is celebrating, he offers character portraits of the ethnically diverse groups that he considers make up the British Isles:

... the proud, intelligent, religious and unfathomable Scots. ... the minute, musical, clever and temperamental Welsh ... the charming, untruthful, bloodthirsty and unreliable Irish ... and the unintellectual, restricted, stubborn, steady, pragmatic, silent and reliable English.

My point here is not one restricted to Taylor, although his lack of inhibition for stereotyping may seem startling; my point is that he reflects the popular views of the times. These views are reflected and reproduced in the pages of the popular press and are voiced routinely in conversations throughout our society. Teachers are not immune to such ideas although the degree to which they are expressed in an educational environment that is increasingly, if very gradually, expressing a commitment to achieving racial equality is certain to be reduced.

While the implications of such views to the future development of our society and to the educational futures of our black pupils may be devastating, their expression is often muted in subtle terms. It is important to recognise that such terms as 'the third world', 'developing countries' and 'intermediate/appropriate technology' are all value loaded, they all suggest patronage and a comparative cultural deficit, and more seriously perhaps they all reinforce false notions of a first/third world linear continuum of cultural sophistication. They offer a distraction from the real causes of poverty in the world as well as to the significance of what Salman Rushdie termed 'the empire we have brought within' our own society.

■ Appropriate Technology

The logic and concerns of Appropriate technology¹⁴ found their way into the National Curriculum Design and Technology orders where pupils have been required to:

- know that in the past and in other cultures people have used design and technology to solve familiar problems in different ways (AT1, 14f)
- recognise that economic, social, environmental and technological considerations and the preferences of users are important in developing opportunities (AT1, 15f)
- explain how different cultures have influenced design and technology,

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both in the needs met and opportunities identified (AT1, 16b)

- investigate how needs and opportunities have led to design and technological activity in other cultures (AT1, 18c)
- understand the social and economic implications of some artifacts, systems or environments (AT4, 14c)
- illustrate the economic, moral, social and environmental consequences of design and technological innovations including some from the past and other cultures, using specific examples (AT4, 16e)
- understand that artifacts, systems or environments reflect the circumstances and values of particular cultures and communities (AT4, 18b)

In a sense, technological achievement is always appropriate to the society in which it occurs. Social needs and desires, along with the resources that we are willing or able to release to satisfy them, determine the technology that we develop. Some might even argue morbidly that western societies deserve the alienating and ultimately unsustainable technologies that we have developed for ourselves, given our greed and hedonism. But what is important here is that technology is always appropriate in this sense in other societies and has been appropriate at other times. From this black perspective relative poverty and power become the major criteria of difference between cultures rather than relative development. Poverty and its causes, in terms of unequal trade relations and debt re-servicing becomes a more obvious choice for study than the sort of appropriate technology transfer promoted in the educational materials produced by charities such as the Intermediate Technology Development Group. Despite some excellent work that has been carried out by dedicated teachers under the appropriate technology umbrella, it needs to be recognised that this perspective is inherently patronising and inadequate on its own in the face of racist ideology.

Other technology attainment targets refer to the need to seek new ideas in other cultures (AT2, 13c), and to evaluate technology from other cultures (AT4, 12b/5c). These attainment targets have offered vital space for promoting

anti-racist education in their own right and despite reassurances that the underpinning conceptual framework of the Technology Order will be preserved¹⁵ every effort needs to be made to protect this space in the application of the revised Order.

Conclusions

As Layton has argued, the aim of liberal educators is to initiate children into the symbolic world of technology, to assimilate them into an epistemology, a theoretically defined form of knowledge. What I am arguing here is that the epistemology that is often promoted and presented is defined in essentially liberal ethnocentric terms. Liberal educators aim to introduce pupils into, to adopt Thomas Kuhn's term, a normal subject paradigm. Neither the demands of 'constraints in working contexts' and/or of 'functional design should be taken uncritically as offering the definitive foundations of our subject. An adequate technology education should be one capable of continued reflective critical evaluation.

Our technology education needs to be in a permanent revolutionary mode, accepted as both shaping and being shaped by society. As Layton suggests, the explicit recognition of different value positions and the attempt to achieve compromise or consensus may not always be successful, particularly where one is dealing with conflicts between short-term immediate survival perspectives and longer term future needs. But as he says at very least: 'What might emerge from such value confrontations is . . . the re-prioritising of values in the positions of individuals and groups and also the reorientation of research efforts to achieve technological and design solutions to the conflict'.

As Glenda Prime¹⁶ has argued, technology education has an important role to play in the development of pupils' cognitive and affective skills: 'Technology education must aim to produce technological awareness, so that citizens are made sensitive to the social and cultural implications of technology'. The social dangers inherent in the blind adoption of the latest technological developments lie, as Prime says, not in the new powers that these technologies provide themselves, but in 'the subordination of the new powers to old values like greed and exploitation'.