

## What makes you think people learn that way!

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### Introduction.

There is little doubt that different cultural traditions result in significant variations in artistic output. Whilst they may vary over time they also contain some lasting resonances. English folk song and choir technique differ from the German choral, Italian 'bel canto' and the French 'impressionist' traditions. Of course, for the western world there is some doubt as to how long this will survive the influence and pressure of television, with its ability to present the same images to everyone. I have very definite preferences in what I watch and like. They can of course be changed, and my tastes in time-wasting have certainly been adapted and redeveloped as I have grown older, but they remain largely a reflection of the social milieu in which I move. I belong now to a subculture of serious viewers, opera goers and 'intellectuals' who analyse and discuss theatre. That is not my original cultural setting of soap operas, quiz shows and tabloid newspapers.

The obvious existence of varying culture and national identity has had just as clear an impact on formal education. Reviews of different societies show the variation in informal child-rearing and adult-initiation practices. Formal education is itself socially created. Different societies have different perceptions of authority and respect for elders, different perceptions of freedom (especially for children) and different assumptions about gender roles and gender relationships. The Marxist educationalists of the 1960s and 70s clearly established that education is a vehicle for socialisation for conditioning the populous to their varied roles. In more recent times it is seen a vehicle for enculturation. This view of education has bred a sense of historical inevitability. Thus in England, Bernstein talked of 'codes' and 'mental structures' and in France, Bourdieu described the 'habitus' in which learning takes place - both concerned with socially constructed and imposed frameworks within which learning is created and facilitated, and which mediates personal consciousness and society at large.

Such frameworks relate to ways of learning and the meaning of 'learning', and it is this notion I wish to consider. The hypothesis is that cognitive functioning and rational argument are constructs of the culture within which a person resides. On a macro level the dialectic between culture and learning presents problems in that different societies misunderstand each other, and on the micro level it can create a mismatch between local subculture and that of the wider society within which that subculture exists, an issue I raised in the previous conference in relation to ethnically varied choices to study mathematics and science.

The influence of 'ethos' and 'culture' and 'time' on thinking can be seen in the debates stimulated by particular groups of psychologists. For example there was

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intense concern and heated debate in the late 1960's when cultural differences were allied to the notions of general ability (see for example Jensen in Deutch et al., 1968). LQ. tests were at that time viewed as largely independent of culture and representing mental responses unsullied by language and other socially dependent factors. It was a time of the discovery of genetic encoding, and it led to the assumption that intelligence was also a part of that encoding. Nature not nurture was the inevitably the dominant issue, Jensen (1968) assessed that about 80% of intelligence was attributable to genetic factors, and Murray (1994) estimated 60%. A number of psychologists (Crombach 1970; Hernstein 1971; Jensen 1971) simultaneously pressed the hereditary position.

The implications of such genetic determinism was that underachieving minorities such as the American black population (and even power-starved majorities such as women) were deemed to be in such a position for ever since their intelligence was written in their genes. This rightly caused a furore since it enshrined white male dominance as an inevitable and immutable law of nature. Its recent reemergence in the work of Murray and Hernstein (1994) has, despite a careful apologia, caused yet another flurry of outraged rejection.

Recent reports in Science suggest, however, a possible link between Dyslexia and chromosome number six and there are (as yet unsubstantiated) assertions that such aspects as 'shyness' and gender-differenced behaviour have genetic connections. It remains clear, however, that rejection of such emotive 'theories' is driven not essentially by their falsehood or truth as by the implication about comparative worth to society and the value judgments placed upon them by those who propound such views. The dismissal of these ideas then becomes as much to do with social! cultural acceptability as with logical exactitudes and there is a need to give a good deal of thought to ways of conducting such a debate in acceptable value terms.

The problem derives in part from the attempt to mirror in human cognition and thinking the realities of human physical development. This linking of mind and body remains a crucial feature in describing the insensible and intangible in terms of metaphors drawn from the observable and evident. The vehicle by which we explore the world (namely our senses) determines the meaning and realities we impose on the world. The choice of the language in which to describe learning and knowing carries with it the structure by which it will be tautologically analysed. The omnipresence of genetic predictability leads to biological determinism (a product of contemporary thinking) contrasting the historical determinism identified by earlier European educationalists.

A similar but more acceptable hypothesis to modern 'biological determinism' resides in the notion of right and left hemispheres and the assumed dominance of one or the other for different people, and more especially different groups of people, of these spheres of mental control. Dunn *et al* (1988) report that these hemispheric differences lead (or relate) to preferences for group as opposed to individual learning styles and to preferences for traditional or less conventional learning situations. Potentially this approach to cognition provides the potential for equally predictive assessment of learning capability. Such determinism becomes acceptable or unacceptable depending upon one's view of the 'rightness' of existing relationships between the

groups concerned (e.g. gender roles) or the extent to which the power determinants and values they imply are viewed as changeable and compensatable.

These debates derive from a notion that there exists a 'general intelligence'. It is this notion that suggests that people's innate ability to learn can be measured by a single measure, whether it be by I. Q. test or by counting synapses. An alternative development avoids the problems implicit in the notion of general intelligence by looking at a profile of specific cognitive elements. The attachment of these 'factors' to specific skills and knowledge makes them very attractive, but the correlation between these tests and actual abilities in various disciplines of knowledge is a little tenuous. Mathematicians, for example, fall into a variety of categories, some displaying spatial awareness and others algebraic or manipulative abilities. In societies where children more often than not follow in father's footsteps there is a greater belief in innate/hereditary abilities and a sense that identifying these characteristics might be helpful in guiding people into appropriate roles.

More recently psychologists have created new 'process-driven' categories of cognitive style which mirror the move of the school curriculum from content and facts towards strategy and process. Much of the methodology is reminiscent of attempts during the 1960's and early 1970's to identify 'creativity' as a specific domain (see e.g. Guilford 1967). This involved tests of 'divergent' and 'convergent' thinkers and later to axes such as whether a person adopted a 'scanning' approach to a problem or a 'focussed' approach, whether people are reflective or impulsive, holistic or serialists. In a return to the search for more general descriptors (c.f. Jungian psychology) these were condensed by Witkin *et al* , (1967) into a single 'field dependent' or 'field independent' description. There has been quite a significant amount of research in the U.S.A. to identify how various disadvantaged groups (such as native Americans or black Americans) might be collectively associated with such differences as an attempt to provide none-social explanations of their disadvantage (e.g. Jones 1986; Jacobs 1987; Dunn *et al*1988).

It is interesting to find Berry (in Modgil *et al*1986) describing social factors such as hunting communities v. agricultural societies, nomadic v. sedentary settlements, nuclear v. extended families as creating different field dependent or field independent cognitive styles. Similarly Dawson (1981) attributes different cognitive styles (field dependent or field independent) of two major groups of Hong Kong Chinese to their different ambient life styles, fishing and agrarian. Thus different ethnic/ cultural groups are assessed as exhibiting differing cognitive profiles attributed to social and hereditary factors. Sham (unpublished) has identified 'behavioural rules' which affect (determine) Chinese attitudes to learning:

- 1 'respect for superiors' and 'loyalty and filial piety' -leading to conformity and suppression of deviant responses and hence low creativity and originality, (Uu and Hsu 1974).
- 11 'learning is memorising by practising' - partly consequential on how the written language is learned and is perhaps why Chinese tend to excel at subject which can be learnt by memorising (science) and practice (mathematics).

### Cross-cultural Comparisons.

We turn now to consider the macro/national variations in what is meant by knowledge and its acquisition. As a particular context consider the world wide reforms of mathematics teaching which occurred during the 1960 and early 1970's. The 'new mathematics' swept the world; initially in America, Europe, and Britain but carried by the power of evangelism to many developing countries. British texts and American texts appeared throughout Africa. Yet the nature and content of these developments were significantly different, with a general categorisation being represented by an American drive towards knowing things, a British drive towards doing things and a French drive towards understanding things. This reflects the different educational principles and beliefs which underpin the systems.

Clearly there is much dangerous stereo-typing in such statements, but like all stereotypes they arise from momentary if partial truths and become dangerous only when over-perpetuated. These stereotypes can, however, be evidenced in the dominant field psychologies to which the three educational systems have generally adhered.

British education has been dominated by Piagetian developmental psychology, in which children are presumed to grow into knowledge if placed in the right supportive experiential environment. Thus Hungarian colleagues commented that in England 'Not to hurt the 'self image' of the children is more important than to force them to achieve better results, there is more emphasis on creativity than knowledge' (Hatch 1993).

American education is dominated by behaviourist psychological notions in which learning is broken down into small manageable elements and incrementally learned, thus the curriculum responsibility is vested in the tests by which this progress is measured rather than the teacher. Curriculum change is vested in projects created by University educationalists. As Howson (1983) says 'In the U.s.A. the teacher is seen as a consumer of curriculum materials ... '

European education is more underwritten by gestaltian traditions in which grand ideas are the object and end points rather than particular skills. National syllabi created by scholars are the fulcrum of curriculum development. School texts proved almost totally unexchangeable during the major reform periods.

In all these Western countries the nature of education has moved from being founded on knowledge and facts to a concern for the process skills and problem solving application of fundamental mental abilities. There is a search for generalisable abilities which can be applied to an ever changing world.

This is not true of learners in some other countries, where knowledge is still rooted in facts, and where the investment possible in education makes very large classes inevitable, and teacher knowledge precarious. Thus learning in this situation becomes 'book bound' and rote-learned skills are not just valued but found useful. Thus the behaviour rules found in Chinese will lead to assumptions that learning is best done by memo rising and practice. It is perhaps this inclination which leads to stronger preferences by Chinese students towards Science and Mathematics, though in direct contrast to this both these subjects have led in the development of the

current psychological focus on 'constructivist theory'. It is a 'teaching for meaning' psychology in which metaphor and language exploration are the vehicles for development. This places enormous emphasis on the images and constructs which the pupil owns, and many of these will be focussed within the pupil's own culture rather than that of the teacher or society at large. Again in those educational systems in which discussion is rare (e.g. the Chinese and African systems) then teaching could become frustrated by the pupils' non response. It assumes the possibility of a negotiated position between teacher and pupils in which pupils have autonomy and rights.

Many of these concerns lies with the notions of authority and correctness. Cultures which have strong respect for ancestors and elders will tend to have a view of knowledge which is based on the notion of a 'body of knowledge' rather than knowledge as voyage of discovery. The growth of 'constructivist' theories in both mathematics and science education relates to the rejection of 'bodies of knowledge' and extrinsically created truth and authority which challenge individuality and self determinism. It is interesting that it has grown within the two subjects most renowned for objectivity and extrinsic validity and that it should have arisen largely within USA and English education - probably as a response a society of capitalistic and self-reliance philosophies.

One of the basic outcomes of the right wing 'Thatcherite' policies is that the 'state' is no longer responsible for individuals. Their current position is their responsibility . Guilt is passed from the state to the individual. So in constructivism it is individual self exploration which is central. It is problematic when family rather than self is the identity unit and social responsibility rather than self aggrandisement is the motivating force. It is also a difficult theoretical position when the teacher's role is and founded in a culture which values authority and leadership. Where authority rather than autonomy is valued then it is likely that mathematics and science will cause fewer stylistic conflicts and constructivist theories will not find favour.

It can be seen therefore that for students changing cultural contexts for their studies there may well be issues and problems which arise from the different assumptions and principles which underlie the very meaning of what it is to learn. These national and/ or dominant attitudes to learning will exist within all societies and there will inevitably be subcultures which may or may not respond sympathetically to these encultured systems.

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