

## CHAPTER 4

# TECHNOLOGIES OF POWER: RECONTEXTUALISING TEXTS

### *An Australian Case Study*

#### 4.1. INTRODUCTION

In order to better appreciate and understand the current situation of mathematics curriculum and assessment, teaching and learning within vocational education in Australia, this chapter will briefly situate the monograph in its broad institutional setting. It will begin in the narrative mode with discussion of historical aspects of the development of the sector and the images which it conveys to the public and the education sector as a whole. This will be followed by an example of recontextualising texts (Bernstein, 1996). Here the analysis will focus on the reproduction and acquisition of mathematical knowledge, with consequent implications for students' and teachers' identities.

#### 4.2. THE INSTITUTION OF VOCATIONAL EDUCATION AND TRAINING

In chapter 1, I discussed the institutions of mathematics and of mathematics education. Now I wish to shift the focus onto vocational education as a sector within the broader institution of education, as set in the Australian context. Discussing institutions such as education, Seddon, Angus, Brown, and Rushbrook (1998) assert that they are effects or outcomes of particular practices of organising which constitute contextual settings that shape behaviour and other social action — their regulatory norms constitute the social infrastructure as a social, discursive, and organisational medium. The impact of these regulatory norms will be in evidence throughout this chapter and the two which follow. Seddon et al. elaborate on the socialisation roles played by institution of education for the young and the (relatively) inexperienced in the transmission of the cultural heritage of society (see also Beach, 1999). They also draw on the work of William Connell in relation to the development of a collective capacity for learning and dealing with change. Vocational education, no less than school education, has a role to play in these developments. Seddon et al. also note the work of Claus Offe who observed that the outcomes generated by institutions both create and depend upon meanings, norms, and values in their production. In other words, cultural change cannot be brought

about by administrative fiat alone; it may be resisted or contested by institutional actors. In the Australian VET sector it is the practitioners and their students who are the ultimate, albeit relatively powerless, decision-makers as they carry out their day-to-day tasks within the constraints and parameters set by their local managers, interpreted from conditions set by state and national bodies who are charged with operationalising policy deliberations of government. However, as Seddon et al. suggest, the efficacy of policy interventions is limited by their reduction of complexity and ignorance of significant social and cultural dimensions in economic discourse and rational actor theories.

In the Australian post-compulsory education sector (which includes both VET and higher education or university) the trajectories of change include the following trends: the growing role of government; the collapse of the youth labour market contributing to an increase in post-compulsory education participation rates by school leavers together with an associated rise of credentialism; and significant changes to work organisation in general. In the particular case of the VET sector, there have been changes to teachers' work and employment conditions associated in part with the declining status of teachers as professionals (see chapter 5) and in part with pervasive industrial reform agendas (see chapter 6). These trajectories shape and are shaped by changes to education and work embedded within changing social life, according to Seddon and Angus (1995), who observe that education is subjected to intensified pressures for change as it becomes repositioned globally and nationally. They claim that traditional arrangements are being problematised and the purposes of education redefined. For example, under the influence of neoliberal philosophies of government the cultural values associated with education are being reconceived in economic and vocational terms; self-management of the institution and the individual is being sought, and the investment in human capital has been reoriented from a social investment to self-investment. Government policies and interventions have been strategic to bringing about change.

#### *4.2.1. A Brief History of Adult and Vocational Education*

Vocational education and training has existed for as long as the novice, or newcomer, has sought to appropriate and even surpass the skills of the old-timer, to use Lave and Wenger's (1991) terminology. The practice of observation and imitation, often of an older family member, was formalised in concept of apprenticeship which has existed in Europe since the Middle Ages (Deissinger, 1994). Formalised institutional provision for adults originated in the 19<sup>th</sup> century with Mechanics Institutes in England. However, Copa and Bentley (1992) describe the institutional history of vocational education in the USA dating back to 1630. The 20<sup>th</sup> century saw the burgeoning of organised vocational education and training, in part because of rapidly changing skill requirements which could not be adequately met by the traditional apprenticeship system (Copa & Bentley, 1992; Williams & Raggatt, 1998). The purposes of vocational education for school children and adult learners alike appear to have been contested over its history (e.g., Copa & Bentley, 1992; Kangan, 1974/1979; Rushbrook, 1995; Stevenson, 1997). In addition there has

been territorial contestation among sectors of education (discussed below), and within the Australian VET sector. In the following I will trace briefly the histories of the further education and vocational components; although the prime focus is on the latter. In policy terms there appears to be a convergence in both purpose and target population.

#### 4.2.1.1. *Adult and community education in Australia.*

According to Des Fooks (1994), drawing on the work of Stephen Murray-Smith, the first Mechanics Institutes were set up in Australia within a few years of their establishment in London in 1823. Although they were not scientifically oriented, they provided the basis of genuine educational work. However, their usefulness diminished as they were overtaken by other historical developments in education (Senate Standing Committee on Employment, Education & Training, 1991).

Terri Seddon (1994a) observes that in the late 1980s students in the Adult Basic Education sector (as it was then known) began to be perceived as an untapped resource to aid in economic recovery. Education was now conceived of as a productive industry, aimed at preparing workers for the labour market. This shift in political gaze has resulted in the growth of the sector and radical changes to classroom experiences; there is now considerable overlap between adult and vocational education course structures.

In the past it was possible for adults returning to study mathematics to determine: (a) which content they wished to study, and for what length of time; (b) the manner of assessment (if any); (c) their level of participation in class; and (d) the use to which their mathematical knowledge was put. With increasing political interest in the adult education sector this is no longer the case, as funding mechanisms are closely tied to documented and audited performance statistics, based on prescriptive curricula. (See FitzSimons, 1997a, 2000d for further description of the impact of changes wrought upon mathematics teaching in the Adult, Community, and Further Education [ACFE] sector.

In 1993 the Certificates in General Education for Adults (CGEA) were introduced in Victoria, and re-accredited after review (ACFEB, 1996), as adult and vocational education moved into the competency-based training (CBT) era. (CBT will be discussed further in chapter 7.) There were five broad areas of mathematics content organised according to purpose. These were specified at three different levels of performance, and assessment had to be verified at moderation meetings. Although it could be argued that moderation meetings provide good professional development for beginning teachers, Peter Waterhouse (1995) describes the tensions in this process. These include experienced teachers feeling under threat in the meetings, as well as the restrictions to teaching practice which result directly from the imposition of such a regulatory framework.

But what has been the cost of these reforms? Whose interests have they served? From the students' perspective, the increasing levels of fees are certainly a disincentive to women returning to study, particularly as they often already experience a sense of guilt in doing something for themselves (FitzSimons, 1994b), aside from financial hardships often associated with limited initial schooling. The

flow-on effect of lifelong education to children in such families cannot be quantified, and is therefore discounted by economic rationalists. Similar claims could be made for other groups identified as disadvantaged. (For further discussion of the issues associated with the technologising of equity through the identification of discrete target groups see Butler, 1998a.) Staff teaching in this sector remain less likely than others to have tenure, working as little as three- to six-month contracts for a few hours a week, year after year.

Increasing control and regulation of this sector of education have nevertheless brought some advantages. One is the recognition of qualifications gained by students; another is the serious attitude the sector has maintained towards professional development. In two states, Victoria and New South Wales, there has been extensive coverage for adult numeracy (Falk & Millar, 2001), especially necessary in view of the fact that many teachers of basic skills do not have strong mathematical backgrounds themselves. However, these are not mandatory, and uptake is patchy (D. Tout, personal communication, November, 2000).

#### 4.2.1.2. *Technical education in Australia.*

Tracing the history of technical education in Australia, Gillian Goozee (1993) notes that

although fulfilling a crucial role in providing post-secondary education and training for large numbers of people, [technical education] was consistently under-valued and under-resourced. The development of technical education has not been consistent but characterised by periods of rapid change followed by much longer periods of neglect. Thus, technical education has usually tended to prosper during times of national crises such as world wars and economic depressions. (p. 6)

According to Peter Kell (1994) the development of technical education has been shaped by working class ambitions for legitimation and institutionalisation of practices, demarcations and procedures, associated with political and economic struggles. It has experienced cycles of development in terms of financial support from governments and shifting educational emphases, from the narrowly instrumental to the broadly-based liberal (Kell, 1994; Rushbrook, 1995; Stevenson, 1995a; White, 1995). However there have been ongoing tensions between levels of government about jurisdiction. There have also been tensions between labour and capital over access to and responsibility for training, with evidence of restricted entry to trades along gender and race lines (Kell, 1994; Rushbrook, 1995).

The second half of the 19<sup>th</sup> century saw the beginning of a system of technical education for adults in Victoria: Abbott and Doucouliagos (1999) provide an historical review of the evolution of agricultural, mines, and 'Working Men's' colleges, as well as the establishment of junior technical schools. According to Kell (1994), prior to World War II the vocational education system across Australia was fragmented, and organised around awards and agreements with specific industries in an inconsistent and ad hoc manner. After 1945 the post-war shortage of labour was partly addressed by immigration policies, but it was not until the release of the Australian Committee on Technical and Further Education [ACOTAFE] (1974)

'Kangan' report that vocational education was established as an entity in its own right — coming to be known as the TAFE sector.

Over the last decade or so, the institutionally-oriented TAFE sector has been re-constructed — incorporated into the newly created VET sector (see chapter 6) — to accommodate formal learning which occurs at other sites (such as workplaces or community settings), often under the tutelage of private providers. The Australian Qualifications Framework (AQF) now encompasses occupational levels ranging from operators, through tradespersons and technicians, to paraprofessionals. Other terms for qualifications more familiar to European readers might be: *craft* (for trade and equivalent); *master-craft* (for post-trade supervisory type); and *technician* (for technicians and paraprofessionals) (Maglen & Hopkins, 1998).

There is a blurring of the boundaries at the upper levels where some vocational qualifications are recognised by universities. Even the term 'vocational education and training' is contested, as illustrated by one academic who included within its realm his university's provision "law, medicine, dentistry, optometry, veterinary science and pharmacy" (Maglen, 1996, p. 9) — an ironic touch given the highly prestigious nature of these professions and that particular university — thus signalling the trend towards de-differentiation of the two sectors (Nicoll & Chappell, 1998). This inclusion nevertheless reflects the history of universities as sites of professional preparation and underlines the sectoral contestation between the two sectors. Yet, Peter Rushbrook (1997) illustrates how fiercely the universities have opposed the introduction of competency-based education and training into their sector although, as Peter Raggatt (1998) recounts, it is now embedded in the UK system of teacher education. In the other direction, students in the final years of secondary school are now permitted to undertake certain accredited VET subjects.

The very concept of seamlessness across educational sectors, promoted in Australia, suggests that there should be some overlap or at least continuity in educational provision across sectors of education. Yet this is not generally the case — the debate over CBT is a prime example; the NBEET (1995b) report on mathematical sciences is another, highlighting the traditional pursuit of different purposes and orientations, especially with respect to mathematics, across sectors — the Australian VET sector was virtually ignored in the report.

In contrast to many universities, the VET sector historically has maintained a dual focus on both students and industry, albeit with fluctuating emphases. While students themselves have had very little voice (Anderson, 1999a; 1999b), from the mid-1980s the corporate sector has established an increasingly powerful presence in the determination of VET policy and practice, as did the trade unions until the election of a neoliberal federal government in 1996. However, it should be recognised that the voices of business and industry are not univocal, and that spokespersons can in no way represent the interests of the entire industry or vocation (Fisher, 1993; Hawke & Cornford, 1998). The trend towards globalisation of economies is also having diverse effects on industrial practices, including education and training programmes, although not in the deterministic manner suggested by some commentators (Butler, 1998b; McIntyre & Solomon, 1999) — impacting on the policy advice given in relation to vocational education and training.

What Counts as Mathematics?

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FitzSimons, G.E.

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