

MIKE ALDER

## THE DECLINE AND FALL OF THE WEST

THERE HAVE BEEN many complaints in recent times about the failures of the educational system. Professor James Allan of the University of Queensland wrote an article in the *Australian* on April 11 in which he bemoaned the inability of undergraduates to write English sentences. In this article I shall explain how things are much, much worse than he or almost anybody else imagines.

I am a mathematician at the University of Western Australia, the leading university in the state. I meet the brightest students who live in Western Australia, and try to show them some of the deepest and most profound ideas underlying our civilisation. These are ideas of space and continuity, the concepts which lead to an understanding of the nature of the space in which we live, the nature of light and matter, the underpinnings of relativity and quantum mechanics as well as their origins in the classical mechanics of Newton and the electromagnetism of Maxwell.

Well, that was the intention.

It is widely suspected that an academic's life is pretty easy, and it is true that it is mostly jam. At some time it is regrettably necessary to miss the jam and to mark the results of tests and examinations. Mostly we regard this as a necessary evil, and it at least has the merit of making it clear how much jam there is the rest of the time. Inevitably the result of marking students' work is depressing, and a common way of dealing with that depression is to share it around, which explains, in part, why I am writing this.

My third-year class contains fifteen students, thirteen of whom turned up to take a test last week. The others had, no doubt, more important things to do. One of the questions asked was how many vertices, edges, faces and cubes there are in a *tesseract*, the object which completes the sequence which commences with a line segment, progresses to a square, then to a cube and then goes on to the fourth dimension. Not a matter of great practical import perhaps, but a simple introduction to

some geometry which transcends the commonplace.

In the calculation it is necessary to multiply four by eight. Three students, nearly a quarter, couldn't do this correctly. The answer 24 was favoured. One student thought that four times eight was 36 while eight times four was 24. Another thought 28 was the correct answer after crossing out his first guess of 12. He had, one conjectures, remembered that multiplication and addition are different. These were not the only arithmetic errors, but they were the most egregious and the most easily understood by a general readership.

One third-year student in an elite university who is unable to do this arithmetic would be remarkable. We are talking about a unit which excludes all but the brightest people of their age cohort in the state, and those who should become leaders in hard science and engineering. But we must allow for anomalies, and some sort of mathematical equivalent of dyslexia might possibly exist. Two, however, sounds like carelessness, and three like enemy action.

It might be, and indeed commonly is, argued that a lack of such technical skills is not significant. I have been assured by educationalists that on any important occasion, a calculator will be available and the correct result obtained. This is to miss the point to an extent which is quite breathtaking, something which educationalists seem to do a good deal.

I daresay that for people in some areas, the answers are all that matters. But for scientists or engineers, it is the *structure* which is important. If a child is told to go off and memorise its multiplication table, it soon discovers that the problem is only half as bad as it looks, because the table is symmetrical. Eight times four is the same as four times eight. This, after some thought, must always work, as can be seen by taking four columns, each having eight rows, and turning them sideways. The child gives thanks that there is some structure and pattern in the world, because it makes life easier and one does not have to remember so much. There is more: if

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one cannot recall six times seven then one can perhaps recall three times seven and multiply the answer by two. The child who notices this has discovered the associative law of multiplication, and again decreased its workload. Whereas the child who calculates eight times four one day on his hand calculator and four times eight the next, is unlikely to remember the coincidence and makes no gain from doing so. All the structure in the number system is hidden inside a little box with buttons on the front.

Imagine that an alien species came to Earth and gave us oracles, devices which would give true and accurate answers to any questions asked. The educationalists would probably embrace the damned things; any moderately thoughtful person should be able to see that they would destroy our civilisation. We have given such oracles to our children in the schools, and they have wiped out the children's capacity to recognise pattern and structure where they are most conspicuous and profitable. The test results of my poor students are evidence.

It gets a lot worse. In ten cases of the thirteen, students were unable to present any sort of an argument to justify their claims despite being repeatedly asked to do so. Providing arguments is what Mathematics is all about: it has been since Euclid. It is the core of how Science is practised: we seek structure and pattern in the universe generally and we seek to construct general rules to describe it, and to communicate them to each other. We have not only destroyed the ability to discern structure and pattern in their most accessible exemplars, we have destroyed our children's ability to communicate any of their perceptions with any clarity. A pig which came by a profound insight into the porcine condition would have difficulty passing it on to its fellows because all it could say is "oink". And some of my students are not a whole lot better off than the pig.

**I**S THIS PERCEPTION of an intellectually handicapped generation merely the grouchiness of advanced age, exacerbated by marking, or is there substance to it? It might be well to consider some history.

Bishop Alcuin of York is credited with determining, in the eighth century at the court of Charlemagne, the foundations of the education system in Europe. It came in two parts, the *Trivium*, or triple way, comprising Grammar, Rhetoric and Logic which was the elementary part, and the advanced section the *Quadrivium*, comprising Arithmetic, Geometry, Music and Astronomy. This system endured, in essentials, for over

a thousand years. It led, indisputably, to the rise of mathematical, scientific and engineering triumphs beyond parallel, and to the dominance of the West. The connections are manifest to anyone who knows anything of science or mathematics or their history.

A major element in this choice was the Christian tradition of applying reasoning to theological concerns; hence the distinctly Greek tone: Aristotle's Logic and Euclid's Geometry in particular were central to the early

Western intellectual tradition. The culture which enforced this tradition on the young ensured that they would hold reason in high esteem and that they would be extremely competent at rational argument. Science and Mathematics are based firmly in this tradition. Engineering, which is a much older discipline than Science, possibly older even than Mathematics (depending on how you define Engineering) is now rooted in the physical sciences and heavily dependent upon them. The same is true of Medicine.

We are now at the end of the domination of the West for two reasons. First, the success of our culture, evidenced mainly by our technology, is so overwhelming that almost all other cultures

are copying it. They are not always copying the infrastructure which produced the mathematics and science upon which the technology depends, but they certainly want the technology. The second reason is that we in the West are busy dismantling the infrastructure ourselves. Logic has not been taught in the schools for over a hundred years and Euclid was phased out in the second half of the twentieth century. Euclidean geometry was once regarded as being important because it combined two key elements: the intuitive perception of carefully isolated elements of the world, and the logical arguments which justified and organised them. It has been at the centre of the Western intellectual tradition for two and a half thousand years, but it could not survive the amateurish educationalists of the last century.

Being able to reason and argue with clarity and force is not considered particularly desirable by contemporary Alcuins. The kind of thinking which produced the world we now inhabit in the West is not being maintained in our schools. Our traditions are being lost. The technology which depends on science which was new and fresh a century ago will keep on going for a while, but the whole machine is slowly grinding down. We are still the beneficiaries of technological advances at a great rate, but the underlying process which led to the technology is being destroyed.

One can easily discern the mechanics of the process.

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An emphasis on logic and reason is most distressing to the stupid. Given a modest kindness, it is not hard to see why the wind should be tempered for the shorn lamb, and a teacher who wishes to see happy, cheerful children will be disinclined to favour an environment in which the crass inegalitarianism of God is demonstrated repeatedly and vividly every day. So drop the logic and replace it with finger painting. Or train them all to press the right buttons on the calculator. Something which conceals rather than exhibits the embarrassing fact that some people are very much cleverer than others is much to be preferred. And above all abandon logic. For logic reveals muddled and confused thought, which is painful for those who cannot produce any other.

One of the serious problems we face as a result of the abandonment of Logic in the educational system is the proliferation of hysteria in just about every area of politics. At one time, some of the political figures of the present day would have been unable to survive the scrutiny of a relatively intellectual press such as the *Times* in nineteenth-century London; the crudest analysis of the arguments presented would have been enough to dispose of some people who today have an enthusiastic following. While the unwashed mob have always been vulnerable to demagoguery, the vulnerability now extends to university graduates, who by traditional standards have a right to expect to have trained and acute minds, but have nothing of the kind.

I write this with sadness since I am charged with producing the training and sharpening the thinking, but I have the responsibility of improving people whose intellectual skills are approximately at the level of mine when I was eight years old. I see the inane simplicities of the pious in the Muslim world and compare them with the pieties of contemporary Australia. There is little to choose between them, they differ only in the fine detail, and it will surely not be very long before the horde of chanting fools with their certainties will outnumber the sceptics with their doubts in Australia as in the Middle East. When you see street theatre and placards waving bravely and crowds chanting, you are seeing people who choose these methods to try to form your opinions. That, presumably, is how they formed theirs. It is how the ignorant have always found their ideas, but this has not usually included any university graduates, who used to use quite different methods.

Is there anything that can be done to halt or reverse the process? Not in this world. The younger teachers have undergone just such a miseducation themselves and are in no position to implement changes; nor will there be any attempt to require it of them. The amount of central direction by the state is hugely greater than at any time in the history of the West: look at the fraction of GDP attached by the government. And there is little benefit to the government in having an educated popu-

lace, and never was.

The self-proclaimed educational experts are charlatans, but most people lack the skills to see this. The bureaucrats who have failed to run industries and banks are determined to run universities and do so with utter incompetence; it is easier to see this in the case of industries and banks—the consequences of incompetence emerge much sooner. The bureaucracies that run primary and secondary education are equally inept. There is no sign that this is going to change: instead we are promised that it will all be done from Canberra. The collapse of the Soviet Union has taught us nothing: our *nomenklatura* has all the confidence of the innocent who has never noticed the problems. Given this centralisation, educational policies are the product of a cluster of amateurs without the intellectual capacity for precise thought and having no reason to believe it is important, or even to recognise it or its absence.

It would of course be quite wrong to set about hanging educationalists (and state ministers of education) from lamp-posts on the basis of merely anecdotal evidence. Hard data is required. To that end, a test handed out to first-year science students at the University of Western Australia may be of interest. It consists of sixteen questions, the first of which requires the student to calculate  $2 \times [5 - 2 \times (7 - 8)]$ . The questions get slowly more demanding: question nine requires the student to calculate

$$\frac{4}{4 + \frac{1}{5}}$$

The test was given to about eighty students, enough for statistical significance. In the year 2000 the average mark was close to fourteen out of sixteen. This year the average was about four out of sixteen and the most common mark was two. So in seven years the level of competence has collapsed dramatically. This coincides with the introduction of Outcomes-Based Education in the schools in Western Australia. *Post hoc ergo propter hoc* is an invalid argument of course, but the evidence that we are in crisis is clear enough.

Perhaps the real crisis is not that the students entering the best university in the state to do science are grossly uneducated; the real crisis is in the abandonment of critical thought that permitted it to happen.

**I**T TAKES SOME TIME for a civilisation to collapse completely. Out at the periphery, honourable people still attempt to maintain standards long abandoned at the centre. Meanwhile the stupid are busily sawing off the branch of the tree we are all sitting on, and we are powerless to stop them.

A journalist in the *West Australian* recently asked why anyone should take Peter Costello's estimates of the future age distribution of the population more seriously than estimates of global warming. There is a good answer to this question which would have immediately

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occurred to anyone with more brains than a kangaroo. It is that we can predict the age distribution ten years from now fairly accurately by taking the current age distribution and adding ten years. A small allowance must be made for births and deaths, and an even smaller one for immigration and emigration. The situation with respect to climate change is totally different: we do not understand climates, they are too complicated.

We can, however, predict the results of sending out into the workforce people who have no capacity to reason. We can expect disasters at power stations and chemical plants as people with only an ability to press

buttons are required, in emergencies, to think. We can expect to have to pay others for the technology because we will be unable to produce it and we will also have to hire engineers to maintain it because except in very simple cases we will be unable to do so. We shall, in fact, become the poor white trash of Asia. We have given our education system over to fools, it is too late to reclaim it, and the consequences are inevitable.

*Dr Mike Alder, of the Department of Mathematics and Statistics, the University of Western Australia, has a website at [www.maths.uwa.edu.au/~mike](http://www.maths.uwa.edu.au/~mike).*

### SECTION 98

No firing squads at dawn  
for cowardice or desertion ...  
alone among its allies,

Australia muddled through:  
An act passed down in Melbourne  
(Section 98)

held off the higher brass,  
their need for "stern examples",  
"encourager les autres".

Decisions were "deferred"  
and correspondence filed.  
Our GG's imprimatur

was needed for a death.  
Each man had volunteered  
and each day more were needed,

filling in the gaps.  
The British Army Act,  
mandating executions,

was found not to apply.  
Haig and Birdwood, even  
the great Monash himself,

were severally incensed.  
George Pearce and Billy Hughes  
conceded how they knew

that .303s at dawn  
would bring no fresh recruits.  
The English asked again;

Australia dragged its boots.  
Even mutiny,  
two months before the end,

was classified "desertion"—  
the stirrers sent to prison  
and not their last parade.

Although their names were splashed  
across the home-town papers  
they still remained unshot.

Words like "nerves" and "shellshock"  
were finally discovered.  
While all the other armies

killed their own if needed,  
Australia showed its talent  
for justice by delay,

default or inadvertence,  
by not quite getting round  
to what "the age demanded".

*Geoff Page*