

# An individual submission on the overview paper "Higher Education at the Crossroads"

by

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**Statement concerning this submission** This submission is particularly concerned with the fundamental disciplines, especially mathematics and statistics, and their place within the Australian university system. Consideration of the situation of these disciplines with the university system leads to more general issues, including attitudes to research, cross-subsidisation, the objectives of teaching and learning and their realisation, the concept of quality, the recognition of quality, staffing matters and the general role of universities in society. So, its comments may also be of more general relevance. In this submission, "the paper" refers to the overview paper "Higher Education at the Crossroads", and the word "section" refers to the numbered sections within that paper.

## Summary of submission

I. Research and the intellectual climate. It is argued that the Government should find specific ways to identify areas of strength and support them on the basis of their achievement. As well as supporting specialised research institutes, this should include supporting these areas within universities.

II. Cross-subsidisation. This issue was identified in the West report. The "Crossroads" paper has inconsistent attitudes to the issue---for on the one hand, market forces supposedly determine worth, but on the other, fundamental disciplines need to be maintained. This submission argues that the question of cross subsidisation within universities may be critical in determining the long-term future of fundamental disciplines in Australia.

III. Teaching and Learning. In the type of society to which Australia has been moving, mathematical (and also scientific) disciplines are valued primarily for their connections and applications to industry, innovation and the like. It is less generally recognised that, like the humanities, they have a potentially vital role to play at the *pedagogical* level within universities. This submission argues that mathematics and statistics have a potentially unique role as teaching and learning disciplines within the university system, in addition to being enabling disciplines in areas such as economics, engineering, social science, policy and science.

IV. General questions of "quality assurance". The views expressed agree with the statement of the Minister in the preface to the paper: "Our challenge is to conduct public discussion in a transparent manner free of the highly emotional and politicised language of the past". The submission argues that "quality assurance" must lose the superficial, ideological and political basis which has characterised it in the past, and which has revealed a serious immaturity in national policy formulation. The submission argues that "assurance" is an inappropriate word in this context, as it does not "ensure" or "assure" any actual quality. This submission argues for an "objective" view of assessment of quality, possibly using some ideas from the UK system, where the evaluation of teaching and research is done on a discipline-by-discipline basis.

VI. Staff. The submission argues that academic jobs have been steadily trivialised over the last decade. In such an environment, why should the most intellectually capable be attracted to an academic career? So, the concern in the “Crossroads” paper about retaining and attracting quality staff is apposite. The solution? Policy should recognise that “the key resource of universities remain their staff”, and such sentiments should be more than a mere cliché in papers like “Crossroads”. This has not been a consistent characteristic of Government policy in the past decade. In order to attract and retain quality staff, conditions must exist which are attractive for bright young minds, but the endless corporate and profit-driven mantras with non-corporate salaries can often have the very opposite effect. In the absence of change, fundamental disciplines will lose staff to overseas where basic research is more valued.

Conclusion. Discussion of policy over the last decade has occurred within very constrained parameters and has had, as the Minister has indicated, a pronounced ideological and political character. In my view this has been detrimental to the formulation of adequate policy over a very long period. In fact, it can be argued strongly that Australia has scarcely had a higher *educational* policy. Basic disciplines and the intellectual seriousness of universities have suffered enormously as a result. The independence of the university in society is expressed by its *difference* from society. It is by means of this difference that universities can best serve their societies. In particular, universities should enlarge horizons beyond the dominant norms in society, not simply reflect these norms and conform to them. Adoption of the ideas in this submission would go some way towards making Australian universities having a more recognised role for fundamental disciplines and with more to contribute to society outside the present narrow range which dominates. Adoption of these ideas would require a genuine problem-solving approach to policy formulation, but a feature of Australian public life now is the placement of the ideological and political aspects of any problem above an attempt to actually *solve* the problem. Let us hope that the fact that the Minister recently has made statements seemingly committing the government to future policy, prior to consideration of responses to the “Crossroads” paper, is not an indication that earlier attitudes to policy formulation will continue.

## **I. Research and the intellectual climate**

1. In section 114 we read “Australia needs to focus on its international strengths”, and in section 116 we read “[Australia] has been ‘punching above our weight’ in a small number of fields such as mathematics, astrophysics and agricultural sciences...”. Mathematics has also been identified as an area of national research strength in other Government reports. It is vital to reinforce our strengths. In the case of mathematics, there has been some specific Government-directed support, such as the Centre for Mathematical Analysis at the ANU, but for a great part, this achievement is due to very intense individual and small team effort, unassisted by any particular government support. What is more, it has frequently occurred under difficult conditions in universities, where mathematical research often has not been supported to the same extent as other areas of lesser overall achievement, but which have been closer to Government priorities.

2. Of course, mathematicians have received ARC support, but this has by no means been directed at specific areas of national research strength in so far as mathematics has been concerned.

3. The move by DEST to assess research performance on the basis of funds earned is inimical to mathematical and statistical research, and the practice should cease. For, however effective it is as a short-term economic convenience, it is a recipe for a great deal of mediocre research, long term intellectual decline, and reveals an underlying attitude that intellectual quality is seemingly something of little importance in funding research in Australia.

4. Specific government initiatives, such as CRCs, have received Government funding primarily for carrying out research which will support industry, a move perhaps necessitated by the traditionally low level of industry-funded research in Australia. However, this may simply reinforce industry's attitude that it does not need to carry out its own research. There has been no comparable support for research which is intellectually based and has longer-term goals and benefits. These benefits include fitting in to a globalised world on the intellectual terms which would gain us respect, rather than becoming marginal nation concentrating on short term and easily quantifiable goals. Indeed, as the Chair of the National Committee for Mathematics, Professor Peter Hall, has said, "...the present DEST approach heavily penalises the intellectual sciences".

5. If the Government is seriously committed in research to the idea that "Australia needs to focus on its international strengths" as described in section 114, it must find specific ways to identify those areas of strength, such as mathematics, and support them on the basis of their achievement. As well as supporting specialised research institutes, this should include supporting these areas within universities. This issue is related to the question of cross-subsidisation.

## **II. Cross-subsidisation**

1. There are conflicting attitudes in the paper to areas that are not positioned to attract a high level of outside funds and/or which are lower in student demand. So in Section 154 we read "Clear policies need to be developed for balancing the rewards for staff involved in entrepreneurial activities and cross-subsidising other areas in order to sustain the broader mission and reputation of the institution". In the Minister's preface we read "...consideration must be given to the critical importance of the humanities, social sciences, fine arts, literature and philosophy. These areas do not find it easy to source non-government funding ....". While qualification is needed to an extent, in general terms, intellectual disciplines like mathematics, statistics and physics also fit into the Minister's category. The problem of cross-subsidisation was also raised in the West Report when it stated "significant but lower demand disciplines may require special purpose assistance..." (p.88, West Report, Commonwealth of Australia 1998).

2. In contrast to the above concerns we also read in the paper that "...there is need for better management of university course offerings ....reduction in resources devoted to small enrolment offerings ...may release additional resources to service the growing areas of student demand" (section 125, see also comments in sections 126, 127). While there is clearly a need to manage resources efficiently, and while it is more than clear that resources are limited, the general thrust of these remarks is against any idea of cross subsidisation. So, there is a blatant conflict between the thinking in sections 125 and 154.

3. Within universities, cross subsidisation, originating from institutional histories rather than deliberate policy, has steadily been whittled away. Indeed, given the financial circumstances imposed on universities by governments of both persuasions, the

universities have been left with little motive or practical option for doing otherwise. This has led, in some cases, to the substantial downgrading of mathematics and statistics, as staff have been made redundant. This includes some staff of marked research and/or teaching abilities. It has also led to a climate where there is little reason for mathematicians to stay within the Australian system when markets demand are held, often implicitly, to contain the only key or yardstick for the evaluation and valuing of intellectual disciplines.

4. The point here is that the question of cross subsidisation within universities may be critical in determining the long-term future of fundamental disciplines in Australia, especially mathematics and statistics. Given the financial pressures and lack of incentives, it seems likely that by themselves the universities will not tackle, let alone resolve, such problems. Specific government action is required to create incentives and/or to support fundamental disciplines more directly.

### III. Teaching and Learning

1. The call for a "renewed focus" on learning in section 87 merely repeats the often expressed desirability of a greater emphasis on the quality of teaching, evident over the last decade from all governments, and which has produced major change in Australian universities. The changed characteristics of the student body over this period have meant that without some corresponding change on the part of academic staff the system would have become unworkable, with unacceptably high failure rates. (No attempt is made here to assess any loss of intellectual quality in our teaching, gauged in an "objective" sense—but note that there is a distinction between the quality of teaching and the quality of the final "product".) The paper itself recognises most of these points in sections 88 to 92.

2. Mathematics and statistics are widely recognised at the research and employment level for their multifarious applications and connections to problems in business, government, industry, financial management, policy formulation and the like. It is less recognised that they can play a fundamental role in teaching and learning. Consequently, these and some other disciplines are well placed to respond to section 87 of the document, which calls for "... a renewed focus on the centrality of learning".

3. The unique quality of mathematics as a *pedagogical* discipline lies in its *analytical* and *objective* character. In the right circumstances, it ignites the reasoning, logical and analytical abilities latent in every person. The reasoning techniques of mathematics apparently lie beyond the individual own wishes and convenience, thus *distancing* the student from the nature of the conclusions. This distancing of the student's own feelings and wishes from the conclusions of the analysis comes only with a serious discipline and effort on the part of the student, but when it is attained, it gives the student an intense feeling of achievement and insight. Paradoxically, the attainment of this state requires a *human* effort, which lies in the student's inner involvement in following the argument.

4. The following are comments I have written elsewhere in relation to a problem of resource allocation and may further illustrate, in part, why mathematics is important in its capacity to contribute to the range of learning experiences of students at universities: "...however, ... the procedure is not grasped intellectually, let alone ethically, merely by

understanding the immediate techniques of how to carry it out. We grasp the procedure better when we can comprehend its effects as a whole, and understand how outcomes vary with variation in the parameters. Then, we may grasp the procedure better still when we can assess its range of possible outcomes against other alternative procedures. Potentially, in the right circumstances, this is one thing that an abstract mathematical analysis of a problem can provide. This approach requires a conscious use of mathematics as more than a mere tool of calculation, but rather as a precise means of critical reflection and of exploring possibilities. It also requires us to "distance" ourselves from the procedure, and to consider it dispassionately as to its fairness and appropriateness. When pursued at a sufficiently high or intense level, involving the whole person, this type of analysis shatters the mental barrier, common in Australia, which limits education to the acquisition of information. Once the whole person becomes involved, the analysis can take on an ethical and moral dimension whose justification lies beyond its immediate political or corporate aims."

5. The point of the preceding remarks is to argue that mathematics has an important role to play purely as a teaching discipline at universities, apart from its recognition as an enabling tool for applications and connections to other areas. It is a reason why it is vitally important that mathematics and statistics, and other fundamental disciplines, are strongly supported for general educational reasons within universities, not only being supported by specific grants for research and applications.

#### **IV. General questions of "quality assurance"**

1. Section 101 deals with quality assurance. Previous efforts at quality assessment have been seriously flawed in my view. The implicit ideological position that quality merely resides in the presence of government-approved procedures has given a very political flavour to quality assurance in Australia. As Professor Peter Karmel has written on previous quality exercises, moderately in my view: ".. these exercises were flawed. There was no clear conceptualisation of what was meant by quality in the university context and many of the performance indicators were of dubious validity. There was a tendency to encourage universities to comply with the values of those conducting the evaluation. The ranking of whole institutions was itself a serious weakness". So, I think that the word "quality" has been distorted and abused in Australia, and that "quality assurance" has had little to do with actual quality and even less to do with its presence. On the face of it, it seems unlikely that the present framework will provide a serious attempt to assess quality, so I share the concerns referred to in section 101.

2. Ideas for appropriate action could be taken from the UK, where there are processes for assessing and rewarding research and teaching on a discipline-by-discipline basis. These processes aim at objective assessment on the basis of the discipline itself, in contrast to Australia's assessment of "quality" on the basis of government-approved procedures at whole institutions. Also, in the UK system, funding goes specifically to those disciplines considered to have excelled within the various universities. In Australia, funding has gone to the institution which is likely to reward those areas which, in view of the way in which quality has been perceived, will bring it most immediate recognition from the Government. At present, there is no way for a department or a unit which excels within an Australian university to be recognised or to receive additional funding. While one might not wish the idea of recognising excellence at the unit level to be carried too

far, and despite problems with aspects of the UK procedures, some form of objective assessment of units on a discipline-by-discipline basis should be considered.

3. Regardless of what is done, one thing is essential--"quality assurance" must lose the superficial, ideological and political character which has characterised it in the past, and which has revealed a serious national immaturity in policy formulation. Indeed, as the Minister says in the preface to the paper: "Our challenge is to conduct public discussion in a transparent manner free of the highly emotional and politicised language of the past".

4. Past policies have created a situation where in many cases intellectual standards at the undergraduate level in universities, especially in traditional disciplines, have dropped. Such an effect was inevitable because of government policies to increase student numbers regardless of ability, while simultaneously reducing funding and adopting a market system for resource allocation. Government responses in the past have been to "shore up" concern by making it difficult for universities and their staff to openly admit to problems, and by creating dubious "quality assurance" processes which have little concern for actual quality and every concern with superficial reassurance. This state of affairs should cease.

5. The very phrase "quality assurance" conveys the notion that following a "quality" review, somehow the presence of actual quality is guaranteed. However, in a procedure which favours process over actual outcomes, this is a nonsense. So, I think the word "quality" has been abused and misused in Australia, and that the word "assurance", used as it has been, is an indication of the superficial reassurance which the process is meant to convey, even in the face of serious problems which it seems are to remain unacknowledged.

## **V. Staff**

1. Section 79 says, "Universities are having difficulty attracting and retaining quality staff". The main problem identified in this section is the continued deterioration in the salaries of academic staff. Salaries are a significant factor in recruitment and retention, but they are by no means the only one.

2. Governments have liked to think of the universities as "service providers" and of students as "customers". The use of such terminology has served the purpose of blurring the lines between academic and intellectual institutions and business corporations, and indicates again the ideological basis of much higher education policy. Governments are, however, not inclined to think of academic staff as "customers" and of academic jobs as a "product", which potential academic staff may or may not choose to "consume". The idea that academic jobs must be made attractive to attract and retain really good people seems to be quite foreign to policy makers. Rather, staff are simply regarded as being there, regardless of incentives.

3. There is now far less reason to enter upon an academic career than there used to be. Many of the reasons were identified in the Senate enquiry report of 2001. It is vital that the Government respond to those legitimate concerns, not merely use them for its own political convenience.

4. Academic jobs have been steadily trivialised over the last decade. Increasing student-staff ratios have meant staff are spending more time teaching, and then teaching to a lesser qualified student body, and this in turn means much more help needs to be

given to individual students to help them cope with their courses. Financial stringency and the market model have led to a proliferation of different degrees and qualifications, as universities have competed with each other to fill every niche in the market, often for minimal returns. These developments have been very costly from the point of view of making an academic career a desirable choice, as staff are compelled to become like school teachers, as well as having to spend enormous amounts of time devising new degrees, new courses and new subjects, and then promoting them in the wider community. This point has particular relevance to those areas that have needed to increase their student numbers to remain viable within their universities, especially those intellectual areas that have a highly structured approach to knowledge.

5. Governments clearly would like there to be academic staff designated to carry out teaching but not research. This ignores the fact that for many staff, including nearly all of the most intellectually committed, the reason they embarked upon an academic career was for the opportunity to do research. If such opportunities disappear for such people, there is little reason to think they would be attracted to an academic career. If the Government wishes to attract and retain quality staff, it has to recognise that those staff have certain expectations without which they will not be in the university system.

6. Even where staff *are* doing research, there is increasing pressure that they should meet Government and institutional objectives, rather than doing what their gifts really enable them to do. So, whereas it would be accepted as ridiculous to force a champion swimmer to switch to soccer to help Australia qualify for the world cup, it seems acceptable to tell a physicist to become an engineer or a mathematician to be like an accountant. But at the international level of research, subjects like physics and mathematics require their practitioners to be like Olympic athletes.

### **Conclusion**

Since the Dawkins white paper in 1988, higher education policy has concentrated on aligning universities with the corporate model, increasing student numbers and participation, and changing the intellectual, teaching and research environment to one which is of more immediate and often short-term benefit to business and industry. Discussion of policy has occurred within very constrained parameters and has had, as the Minister has indicated, a pronounced ideological and political character. In my view this has been detrimental to the formulation of adequate policy over a very long period. In fact, it can be argued strongly that Australia has scarcely had a higher *educational* policy. Basic disciplines and the intellectual seriousness of universities have suffered enormously as a result.

The Government should note that if universities become merely like any other institution in society, there is really no reason for universities to exist. The independence of the university in society is expressed by its *difference* from society. Paradoxically, it is by means of this difference that universities can best serve their societies. In particular, universities should enlarge horizons beyond the dominant norms in society, not simply reflect these norms and conform to them. In this respect, government policies on both sides have been almost useless for, to use a phrase which I think is due to Professor Simon Marginson, universities in Australia have been largely regarded as no more than “businesses to help business”. Adoption of the ideas in this submission would not automatically solve these problems, but would go some way towards making Australian universities more intellectually stimulating places with much more to contribute to society outside the present narrow and often mediocre range which dominates. Adoption of these

ideas would require a genuine problem-solving approach to policy formulation, but the national trend to place the ideological and political aspects of any problem above an attempt to actually *solve* the problem in itself means that a serious change in attitude is required.

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June, 2002