

The Secretary
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**Submission to Inquiry
Research Training in Australia**

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Introduction

There is no area of public administration that is more essential for Australia's future prosperity and even survival than the creation of a fearless, ethical, and vigorous research activity that is also creative, innovative, efficient and viable. That is not currently the situation in Australia. I am encouraged and delighted to have an opportunity to contribute to the fixing of a system that whilst not totally broken is making loud creaking noises and is unable to serve the Nation as it should.

Background

I ask that you excuse my discard of modesty but you do need to know why I believe that this submission should be made. I began my research career as a technical assistant in CSIRO Division of Physical Chemistry in 1958 and departed some 21 years later as a Principal Research Scientist. I spent the next 30 years moving from position to position as I saw Australia's research capability decrease from world's best to almost third world. Whilst at CSIRO I shared the development of forest prescribed burning for bushfire control and was honoured with an Order of Australia Medal for that work. As a spin off from that bushfire research I jointly developed a building fire detection system that changed the world technology in that field and is installed in many high value locations including the Euro Atomic Research Centre, the Australian Parliament House and the International Space Station to mention just a few. I then headed up the National Centre for Rural Fire Research at the Chisholm Institute. After that I became Deputy Director of the Australian Emergency Management Institute then in the Defence Department now in Attorney General's Dept and later the Supervising Meteorologist responsible for fire weather warning services in the Bureau of Meteorology.

For After retirement I have become a Senior Research Fellow in Geography and Environment Sciences at Monash University assisting in the supervision of three postgraduate students. In between being a winemaker at our own vineyard in Gippsland. I apologise for this CV but I do have experience of research at the applied and pure levels over 50 years. My observations will be based on real experience and most certainly I am not in a spin to promote some other agenda.

Australia's current research culture.

As we move from a post WW2 period of enlightenment when our amazing research and technology developed for our survival was redirected towards national peace time priorities. We were led by great leaders that included Sir Ian Clunies Ross and the then Minister of Science, Lord Casey. These were exciting times and Australia became the world leader in many fields for example the use of hardwoods for paper production and radio astronomy to name but two. CSIRO held a unique reputation and enjoyed considerable freedom and was of world class. It was a major research training institute also through its overseas study scholarship scheme and its employment, training and study leave for young researchers.

The Universities had substantial resources for education and research training. University academics got on with their research and teaching devoting about half their time on each. Australia's research, research training and teaching was so well regarded that we had a steady influx from everywhere and developed to our loss a spectacular brain drain, which Federation Fellowships have not reversed. It is still the case that if you are a leading researcher overseas you do not return to a depressed research environment filled with spin, power plays and beurocratic interference and what must be the lowest research grant rate in the developed world. Thus the world's best are not available to us here for the training of future Australian researcher. Australian academic research efficiency is at least halved as most of one's time is spent in preparation of funding submissions which you know you will not get but have to have a go incase you strike it lucky or hit on a pork barrel project or coincide with the latest fashion. Don't even think of seeking research and training funds in an environmental area that is not directly involved with climate change.

My observations within the university system is that research and training by mentoring and studentship is barely surviving under administrative loads, increased and unreasonable teaching loads and the unending search for funding.

CSIRO has gone from being a flexible innovative and responsive research and training organisation (technically outside the public service along with the Atomic Energy Commission and the Snowy Mountains Authority) to a highly constrained, secretive top down driven and beurocratic public service department.

The pressure on post graduates.

The increasing competitiveness within the academic community is breaking down cooperative and collegiate culture which is impacting on the quality of life of our best young researchers, the post graduates. Their work loads are huge and the remuneration is so small that their physical and psychological health is under constant threat. It is unfair that thirty year old Australians working on projects that are in the National interest and who may have families (or should have) must make do on about 20,000 dollars per year. It cannot be done, and the anger that is generated by this exploitation by Australian governments encourages the migration of our brightest and best to other places where they are more clearly valued. Post graduate stipends should be doubled or at least increased by 50% to reach a minimum wage.

The funding model for post graduate training generates a necessity to maximise the number of post graduate students for each supervisor until such a time that the quality of supervision and mentoring declines some times to below standard.

Another problem more subtle that evolves from the pressure on post graduate students is the necessity to provide 'safe' projects that are sure to pass external examination. Blue sky projects have no place in the Australian system. The Mossbauer discovery where a PhD study won a Noble prize could hardly have occurred under the current Australian environment despite us still being a very innovative society.

Research training

The ideal research training model is the classic one where the student works very closely with a mentor whilst achieving finally a post graduate qualification as recognition of achieving a professional capability for research.

Research is not a set of technical skills like surgery or welding but a state of mind and a capability to create along with the hardest task of all of achieving total intellectual honesty.

Some suggestions for improvement.

1. Drastically reduce the proportion of University research funding provided by the Australian Research Commission to about 25% of total research funding. The remaining 75% to be provided to Universities for fair distribution to their schools and institutes for their discretionary funding. An 'estimates' style annual review of research performance whereby the University Vice Chancellors are required to report upon and justify their research performance, funds distribution and expenditure.

Whilst the ARC system has served well it does suffer from several problems that inhibit Australia's research and training. Examples of these problems are the acceptance of only peer assessed research proposals which inhibits speculative and creative research. There is an opportunity to scuttle competing research which leads to anti competitive behaviour and opportunities for unscrupulous conduct. Safe proposals have a much better chance of success. That is counter to creative research. There is huge amounts of time spent preparing proposal after proposal even though there are only small chances of success. There are also large amounts of time spent on review panels. This a haemorrhage of the little time our most experienced University research leaders have available for teaching, research training and research. The quantity of funds for research both within and without the ARC needs to be at least doubled.

3. Research is a life long activity and not just a job. When one retires from the formal workforce the knowledge and skills are not totally put into gardening or playing golf. There are a large number of highly skilled people available who for a modest stipend and the provision of some office space would be available to assist University research and post graduate supervisors with regular mentoring of post graduate students. For example for a one day per week salary I give two days of my time to assist in the supervision of three post graduates and maintain an active although modest research program. I am not alone and there can be good returns for a modest investment to the universities by expanding a senior

research fellow program. Any such scheme would require performance based reviews just as for any senior academic.

4. Take courage, and cut the bonds on CSIRO, dismantle it and divide it up into three independent and well funded Institutes. The first to be co associated with Universities where the mostly pure research activities can prosper in synergism with well funded academic teaching, training schools and research centres.

The second component of CSIRO is the industry related divisions, which should be partially even largely funded by industry levees. The third are those divisions of CSIRO that conduct research which lies within the province of the States, mainly agricultural. The States in combination or through COAG would ensure the funding and the research locations and facilities.

It will be essential to remove the "Research in Confidence" now rife within CSIRO that desiccates communication and creativity. The Nation does not get a good return on the public money that results in secret reports that wither in drawers and cupboards. It is not possible to have open Government without open media and open research.

The point of this major surgery is to restore CSIRO to a first class research institution suitable for being again a first class research training 'by doing' institution with 'research apprentice' resources and their studentship schemes contribute to the national and global interest.

Research training and education can only take place in a free and open environment that values creativity and independence.

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