Challenges Facing Acoustics in Australia

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ABSTRACT

The Australian Acoustical Society is a professional society with membership from all aspects of acoustics (including vibration). One important concern, from an investigation of the top ten issues for the Membership, was the future for acoustics in Australia as a whole. This was further investigated and two major areas were identified: changes in the approach of the government regarding support for publicly funded facilities and opportunities for education in acoustics. This paper provides an overview of the findings thus far and is intended to be an introduction to the workshop discussion on this topic.

INTRODUCTION

As participants at the Australian Acoustical Society (AAS) Annual Conference would be well aware, acoustics covers a very wide range of subject areas and plays a part in all aspects of our life and our society. It is reasonable to say that the larger proportion of those working in acoustics is in the area of noise and vibration assessment and control. Community standards demand not just an assurance of a hazard free environment but one that is acceptable and meets community expectations for the current lifestyles. As well as the increase in population density in our cities and towns there are an increasing number of noise sources in our daily life, such as sound systems and kitchen aids. The costs to the community and to industry of noise assessment and noise mitigation measures can be quite substantial. Prevention of hearing loss and assistance to those with a loss are accepted as responsibilities for our society. Musical acoustics along with biological and underwater acoustics make significant contributions to our society.

It is therefore essential that Australia maintains a high level of expertise in all aspects of acoustics. However during the last decade those working in acoustics have become increasingly concerned about the impact of government policies on research, development and education in acoustics, and thence on expertise, standards and industrial practices. Australia used to excel in a number of areas in acoustics such as building, environmental, engineering, occupational and musical acoustics. It achieved a high international reputation and has provided a significant input to international activities such as ISO standards. However, the lack of strong, supportive government policies particularly in the last decade has seen a severe erosion of the acoustics expertise and facilities. Government polices have also had an effect on education. This all means Australia will no longer be a leader in acoustics in the region but may become a follower, reliant on overseas expertise. Some aspects were discussed by Burgess [2004] and this paper builds upon those comments and is intended to encourage discussion during the workshop.

CONCERNS

In response to the concerns expressed by the membership on an ad hoc basis, the AAS first sponsored an investigation of the "Top Ten" issues. This was aimed at quantifying the extent of concerns and to give direction on the next steps that the Society could take [Burgess and Lai, 2003].

From further investigations two key issues that emerged as a threat to the profession of acoustics in Australia were the impact of government policies on research, development and provision of publicly funded services and facilities and the status of education in acoustics.

PUBLICLY FUNDED FACILITIES

The government policy for rationalisation and commercialisation of publicly funded facilities has considerable impact on the future for acoustics in Australia.

The building acoustics area seems to have been hit particularly hard by this policy. The CSIRO facilities are essentially closed and future viability of the National Acoustics Laboratory (NAL) complex is under a cloud. The NAL site has been sold and leased back for fixed time periods. These publicly funded facilities have provided more than just an independent testing facility. They encouraged strategic, longer term research projects to investigate particular issues related to the nature of building construction in Australia and their staff developed skills. Among other contributions these skills could be applied to major projects and contribute to the development of Standards. Surely the government should support at least one suite of test rooms which meet international standards for building acoustics testing. A benefit of this would be a core group of skilled personnel at that facility whose expertise could be utilised when national issues arise.

There is continuing erosion of the skilled acoustics personnel in environmental and occupational agencies. These non skilled people don't have a deep understanding of the complexities of acoustics. Consequently there is an increasing trend towards rigid application of policies, some contracting of targeted projects and no support for strategic research into these important areas.

Maintenance of measurement standards has been considered a government responsibility and Australia has been seen to be a leader in our region for this important aspect. There was considerable work being undertaken on ultrasonics which is vital in view of its increasing application in the medical world. Yet support for all of this has been eroded with the restructuring within the CSIRO.

EDUCATION

The majority of those choosing a career in acoustics undertake a degree in science, engineering or architecture and

then seek further education in acoustics. The concerns of those in the higher education system overall are regularly expressed in the media. The Federation of Scientific and Technical Institutions (FASTS) acts as a lobby group on behalf of the wider science community. The FASTS President has publicly expressed concerns about many aspects of the approach to tertiary science eduction from the current government. The dialogue can be followed on www.fasts.org.

Just one example is the comment from Macguire [2005] that "Australia's continuing funding cuts to technology-driven R&D offer the stark promise that it could be left standing as the Asian technology race gets going" He went on to quote the FASTS president "Federal Government investment in R&D has fallen to just under 0.6 per cent of GDP – down from 0.76 per cent 10 years ago." In regard to student numbers entering science, a DEST [2005] report on a decade of studies of first year students shows that enrolments in science declined by 20%while there has been a 36% increase in 1st year enrolments over the same period and a 70% increase in Management and Commerce enrolments.

There is little encouragement for students to embark on such science and engineering degree programs. There is only one formal post graduate study program which allows specialisation in acoustics subjects. Intensive short courses for continuing education used to be organised regularly by various tertiary institutions. Increased pressures on University staff, increased administration costs have reduced the enthusiasm for putting on such courses. A decade ago when improving the skills of the workforce was a government policy there were financial incentives for companies to encourage their staff to participate in such courses. Now with higher costs for such courses and increased pressures in the work environment employers are less supportive of releasing staff for the time of the course.

The challenge facing acoustics is that there can be great difficulty in meeting demands for new staff. New graduates with few skills in acoustics receive 'in house' training which may well be focussed on the current tasks and not provide a broad based education in acoustics.

THE WAY FORWARD

Acoustics in Australia is clearly at a critical stage. On the one hand there is a clear need for skilled personnel, good laboratory facilities and support for research and development. On the other the government policies are destroying the high quality facilities, eroding support for research and development and drastically reducing the number of specialist staff. This workshop is one opportunity for the membership to provide direction to the Council of the AAS.

REFERENCES

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