The management of research at institutional level

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Introduction

Many academics still find it difficult to come to grips with the terms "research management" and "institutional level". They see research as an activity undertaken within departments and are concerned mainly with the management of research projects and client contracts. Those who are responsible for managing research at an institutional level can understand the meaning of managing a research project, or managing a research grant, but the notion of managing research from the center of an institution doesn't seem to make much sense at all.

This view is quite understandable, and certainly it is true that the single most important ingredient in carrying out high quality research is good quality researchers. It is the quality of the people that are involved, and how they are involved, that is the key to measuring success. Without good quality researchers, the management of research at an institutional level is useless. However, good quality research also needs money and appropriate infrastructure, whether it be costly equipment, a good research library, or technical support. Moreover, the overall effectiveness of research carried out and funded has changed to such a major degree in recent years that new institutional approaches are required.

This brings us to research management. The whole idea of research management is to develop institutional policies and procedures to support researchers in all aspects of research, so that the resources and infrastructure are available to support high quality research. Research management is not about telling researchers what they must or should manage or how they should manage their projects. It is concerned with providing the support and the institutional environment that is conducive to carrying out high quality research. It is about the management and maintenance of research infrastructure, about efforts to secure increased research resources for the institution, and it is about making sure that fairly good departmental research plans are in harmony with the broad direction that the institution has decided to take and is prepared to support. In a sense when research in many fields is becoming more costly and in the context of overall limited resources at institutional levels, it is important to have strategies about how to develop and maintain the resources necessary to support such research.

While many academics still have some difficulty with the concept of research management, most universities as institutions are now quite committed to research with the idea. Research management plans have been common since the late 1980s, most universities have both research management plans and plans for the management and maintenance of research costs. This will illustrate some of the issues that institutions are addressing in their efforts to manage research resources and to provide an environmental supportive of research.

Research management plans

A decade or so ago research management plans and strategic planning were foreign concepts to most Australian universities, although a small number of universities and a slightly larger number of faculty and department heads were beginning to think about research management and planning. However, research management plans suddenly became part of institutional life when they were required by the Commonwealth Tertiary Education Commission (CTEC) in the late 1980s, and in many cases universities developed their first research plans well before they embarked on developing their first strategic plans. Since the late 1980s, however, there have been strong pressures on universities to take planning much more seriously, especially in the context of an overall government strategy to give universities more discretionary freedom but in turn to require better planning and greater accountability. Of course, within this context, there is often considerable debate about the extent to which universities have actually gained greater management independence.

The Review of Efficiency and Effectiveness in Higher Education, established by Minister Susan Ryan in late 1985 was one of the first attempts in this country to provide a detailed discussion of the importance of research resources and how they should be managed, and introduced the idea of research management plans. Admittedly, for many years prior to 1985 the various reports of CTEC (and predecessor bodies) that had discussed the management of large equipment items and there had been special schemes for funds, including replacement equipment. But to my knowledge, the Review of the Review on Efficiency and Effectiveness in Higher Education was the first detailed discussion of the management of research in the context of how institutions might better manage their resources, and contained the first explicit recommendation for institutions to have research management plans. Further, it should be noted that this report provided an excellent discussion of many aspects of management and planning in higher education. Some of these were taken up by the system at the time, but quite a while was lost in the rush to implement the Dawkins reforms which followed soon after.

Currently the management and planning for research and the Efficiency and Effectiveness Review report drew attention to the increase in the scale and nature of resources needed for research many years. It pointed to what ultimately becomes a major dilemma for the management of research resources and for strategic planning:

There is a real dilemma for universities seeking to maximise the benefits from their research activities. On the one hand, resources of time, staff support, capital equipment, facilities and library services need to be available to all academics to enable them to fulfill their research potential. But on the other hand, there has to be some limit to the access to this sort of a set of resources. In other words, available resources are inevitably limited and some choices or restrictions are unavoidable. A balance must be struck among opportunities to pursue basic, curiosity-driven research, applied research, and which is of the future and encouraging the workforce of the future; and meeting the needs of industry and the community. Generally, it is obvious that the balancing of competing priorities is necessary... What is vital, however, is that each institution develops deliberate policies for defining its research objectives (Review of Efficiency and Effectiveness 1986, pp. 141-142).

The report then went on to say:

The committee considers that an effective way for universities to plan and manage their research activities is in the light of competing priorities for research. In this way, the institution's research objectives and priorities can be used as an 'information tool' for assessing the resources it needs to fulfill its strategic plans. In addition, the availability of such information would assist the CTEC, outside funding bodies, and other institutions in exercising their responsibilities and in the development of effective strategies for allocating funds and (pp. 144-145).

This led to a specific recommendation that:

Universities should provide a strategy for the effective use of the resources presently available to the institution, and to the research activities in general.

Significantly, the report said that such a strategy should include the formulation of objectives and priorities and should be based on "the development of specific allocations of activity within particular disciplines within each institution, and the adoption of staffing policies to ensure appropriate appointments are made in such fields". It expressed the view that while every staff member of a university should have at least an initial opportunity to do research, "not all will be equally effective". It went on to warn against an emphasis on the recognition of research achievements and the result of such research being spread too thinly for effective use of resources.

The report's recommendations with regard to research management strategies or plans were taken up by CTEC and institutions were required to develop research management plans with their next major institutional audits. Hence very quickly all universities embarked on the task of preparing plans as a matter of public policy. DEET took over the policy and required universities to provide research management plans as part of their annual submissions related to postgraduate education and the teaching of research. In some cases it was slightly relaxed in that the institutions were not required by DEET to submit their most recent research management plan, it should be noted that the guidelines for this process were developed in 1985 as a draft version of their research management plan with their institutional portfolio. (Quality Assurance Program Guidelines April 1985, p. 5).

Since the late 1980s universities have had to come to grips with some of the difficulties in developing effective research management plans. As a result of these plans, many universities have found that they have in fact created plans with a greater deal of confidence, believing that it was relatively simple to develop a plan which would not only meet the requirements of the Commonwealth but would also provide a useful management tool for internal resource allocation and priority setting. But many soon discovered that there remains a major dilemma for the management of research resources and in deciding how to concentrate resources and encourage a greater degree of selectivity in resource allocation.

While there is a great deal of variety across the system in the approach taken to the planning for research management plans, it appears that research management plans have gone through three distinct phases. The first plans developed in the enthusiasm of the late 1980s tended to be far more comprehensive in terms of research and the committee structures for research management and the allocation of resources including scholarships, and specification of what resources the university would provide for research and which it would not provide for research. Generally there was relatively small emphasis on specifying research management plans as a way of assessing research opportunities and setting out the strategies to be used to achieve these goals. While many of these plans took a great deal of effort to prepare, in many respects their value was limited in terms of specific guidance to the management of research. In fact, many institutions found it necessary to do something to set out clearly the institutional committee structures related to research management and the resources available to support research. A second generation of plans began appearing in the early 1990s, and these marked a major step forward in the approach to and methodology of planning. They were essentially strategic plans setting out priorities, strengths, and performance indicators which were to be used to determine whether the goals had been met. Many plans also indicated what financial constraints existed, but these were to be used to achieve particular objectives and where such resources would be sought and also particular targets to which the institutional resources would be committed. University of New England Research Management Plan for the 1995-1997 triennium specifies the following objectives:

- In 1995, 1996 and 1997, annual increases in the number of applications for ARC large grants, in the success rate and in the total funds attracted. By 1997, to aim to submit 100 large grant applications per year for ARC large grants (in 1993, 88 applications were submitted and $1,302,600 was attracted in total grants).
- In 1995, 1996 and 1997 increases in the number of applications to other National Competitive Grant schemes, in the success rate and in the total funds attracted.
- Increase funding from industry by 10 per cent p.a. over the triennium.
- Increase enrolments in research higher degrees by 15 per cent over the triennium.
- Increase the proportion of academic staff holding doctorate degrees to 10 per cent by end of 1995-1997 triennium (current 5.5% of academic staff hold a doctorate. - Arts: 61.9%. EBE: 52.2%. EHS: 38.3%. Sciences: 79.3%).
- Introduction of scheme of Vice-Chancellor's awards for research excellence and contribution.
- Major survey of research higher degree candidate and supervisor to be carried out in 1995, and smaller follow-up surveys in 1996 and 1997.
- Increase the number of ARC Collaborative Grant applications from 5 in 1994, to 12 in 1995, 14 in 1996 and 16 in 1997.
- Management information system for research activity to be in full operation by January 1996.
- Study of PhD completions and progress rates to be completed by 1995.
- Full implementation of new policy on extra earnings by June 1995.

My impression is that these kinds of plans are proving to be much more helpful as management tools. Already some institutions have moved to what I see as the third generation of management research plans. These are almost identical to the previous generation plans, except that they are part of a set of integrated institutional plans which not only include a corporate plan covering an institution's strategic objectives, teaching and learning management and community service management and operational plans at faculty, school and departmental levels and for major programs, but also include all aspects of research management and planning. Many institutions have now integrated and have built-in mechanisms for monitoring and evaluation as well as very explicit and effective links between planning, monitoring, evaluation, and decision making. To my mind, this more integrated approach to planning and budgeting would appear to be the way forward if we are to be effectively manage the research and resources available to support research.
resource allocation is crucial. This new approach has the potential of identifying other academic settings that do not fit the first generation plans, and this is decided on strategies of selectivity—

### Conclusion

In conclusion, the strategic planning process is an integral part of the University's development. The University has made significant progress in recent years, and the review team notes that the process has led to the development of a well-integrated plan. The plan addresses various areas, including infrastructure, academic programs, and student support. The review team recommends that the University continue to monitor the progress and make necessary adjustments to ensure the plan's successful implementation. The University is encouraged to remain committed to its strategic goals and to continue to engage with stakeholders to ensure the plan's sustainability. The review team also suggests that the University consider opportunities for collaboration with other institutions to enhance its strategic planning efforts.
to make a general claim to all intellectual property developed by academic staff as part of their employment or where the University has contributed other University owned intellectual property. The University has not and will not claim ownership of intellectual property created after the expiration of copyright work where the subject matter is primarily concerned with scholarship, research, artistic expression, creativity and academic debate. The manner in which rights of copyright ownership are to be allocated will be determined by staff of the University. Further, postgraduate students and bachelor degree honors students wishing to work with a member of academic staff in a project outside or at the University, will be required to obtain the consent of the research team, may be required by the Head of Department to assign copyright, or in a particular case, by the research team to assign copyright to the research team. The University has not and will not claim ownership of any intellectual property generated by or from the student's PhD study. The University does not limit the right of the student to own or transfer ownership to any intellectual property, or claim any rights to the intellectual property owned by the student. The University will not require an assignment of ownership for any intellectual property created by the student.

5.2 At the commencement of an honours or higher degree research program, the student and supervisor(s) may be required to meet with the Head of Department to assign copyright or other ownership for the ownership of any intellectual property arising from the student's project. In such meetings, the University's policy on the ownership and commercialisation of intellectual property and revenue sharing arrangements with respect to commercialisation of intellectual property must be fully explained to the student before the student signs any agreement. Such agreements may cover proposed revenue sharing arrangements or other similar rights which are to be jointly owned by the student and supervisor(s). In cases where it is agreed by the student that any property be licensed to the University, the University will be assigned to the University, any property created will be subject to these rules and the student must be treated no less favourably than the University in any subsequent arrangements with third parties.

5.3 The University reserves the right to require that the University’s intellectual property created as part of the student's project be assigned to make the University a party to any intellectual property generated by or from the student's PhD study. The University will not require an assignment of ownership for any intellectual property created by the student.

6.

The project was not concern with the right of the University to control the use of intellectual property created by the student, but rather with the right of the University to own or to have control over the use of intellectual property created by the student. The University's policy on the ownership and commercialisation of intellectual property and revenue sharing arrangements with respect to commercialisation of intellectual property must be fully explained to the student before the student signs any agreement. Such agreements may cover proposed revenue sharing arrangements or other similar rights which are to be jointly owned by the student and supervisor(s). In cases where it is agreed by the student that any property be licensed to the University, the University will be assigned to the University, any property created will be subject to these rules and the student must be treated no less favourably than the University in any subsequent arrangements with third parties.

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Each proposal must provide convincing justification for establishment. For research council's objectives must be clearly specified in the draft constitution and should be in accord with the University's overall mission and the objectives of the faculties as set out in their strategic plans. The objectives of a centre will normally include one or more of the following:

- to pursue high quality research and disseminate information;
- to offer postgraduate courses and supervise higher degree research;
- to undertake consulting and contract research through the University;
- to provide a facility to structure interaction which assist high quality research activity and the attraction of research funding;
- to be engaged in technology transfer and the commercialisation of research findings (Rules for the Establishment and Management of Research Centres 1993, section 2.3).

The Vice-Chancellor will refer proposals for advice to the Research and Postgraduate Studies Policy Committee, which may request further information from the proposers, but centres are established by Council on the recommendation of the Vice-Chancellor.

Second, the rules specify clearly management arrangements. Each centre must have a Director appointed by the Vice-Chancellor and responsible for the management of the centre including the supervision of research and support staff specifically appointed to it rather than to a Department. The constitution of each centre must be approved by the Vice-Chancellor and must specify the procedures for consultation within the centre to be followed in the appointment of the Director. Each centre must have a Management Committee (or board) with the membership, composition, role and responsibilities approved by the Vice-Chancellor. Invaluable in the management of the committee is highly desirable, but each committee should also include substantial representation from the University. The general role of the management committee will be to provide advice on forward plans and proposed activities of the centre, and comment on performance in the light of specific objectives and performance indicators. Management committees generally will take a more active role than advisory committees in advising on policies relating to research and financial performance. The constitution of each centre should specify the method of appointing the advisory committee or management committee and the roles and responsibilities of members of the committee, and how casual vacancies will be filled.

Third, the rules specify clear accountability and management repercussions. Any centre, which is not used or which is used in a way which is inconsistent with the objectives of the research centre can be terminated. If the centre is attached to a department, and an officer or the University, then the centre is likely to be closed.

On the recommendation of the Academic Board, the Vice-Chancellor may give approval for a research centre (other than a centre attached to a department) to operate as an academic department of the University for the purpose of enrolment and supervision of PhD candidates and masters candidates by research. Student load will be credited towards the University's student load. The centre's administration may be conducted by Centre Directors, or Research Coordinators, or Research Coordinators. Research centres may offer units towards University awards by the Faculties. Funding for such teaching must be negotiated with the Deans of the appropriate Faculty and the Vice-Chancellor.

We consider this provision to be an important innovation, but still has to be determined under what conditions the Academic Board should give such approval.

Fifth, the rules provide incentives for strong research centres to receive support in the University's overall research strategy. Research centres that have been successful in the University Research Awards competition will appear in the University Handbook in the list of research centres, while only recognised centres will be eligible to fund their activities from University Research funds. In this way, we hope to make a clear distinction between official research centres and other centres in the University and be able to provide as much support as possible to research centres.

References
The Australian Research Council Large Grants Scheme: Problems, concerns and recommendations for change

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This paper discusses problems with the Australian Research Council (ARC) Large Grants Scheme including the composition and function of ARC panels, rejection of 30% of applications without peer review, validity of assessment when peer review is employed, the manner in which panels reach funding decisions, ARC administrative processes, and the level of competition for ARC funding. Consideration is given to changes that will improve the effectiveness of the Large Grants Scheme.

The Australian Research Council (ARC) advises the government on funding for basic research in all disciplines except medicine and dentistry. The level of competition for ARC Large Grants (only some 20% of applicants in 1992-1994 were successful) has led to scrutiny of decision making processes employed by the ARC. As noted in a recent review of grant outcomes, "in a situation where less than 20% of applicants for grants are successful, it is essential to ensure that the procedures are rigorous and the outcomes generally accepted as fair and equitable by the applicants (ARC 1994, p. 10)."

Although the Large Grants Scheme has never been subjected to evaluation on the basis, for example, of the assessment of the National Science Foundation undertaken by Cole and Cole (1981), some ARC procedures were appraised in the administrative review of NSEET undertaken by Wilbraham (1994) and through reviews of outcomes of ARC funding in a number of disciplines. In addition, there have been surveys of applicants (Wood, Monk and Happian, 1992; Over 1995) as well as commentary on the Large Grants Scheme (Over 1994). These sources will be drawn upon to discuss problems with the Large Grants Scheme and to provide recommendations for change. First, however, an outline of how the ARC Large Grants Scheme operates is required.

The ARC Large Grants Scheme

There is a single funding cycle each year. Applications, which close at the end of February, are assigned to broadly-based panels, each of 10-14 members. Currently there are four panels: biological sciences; physical, mathematical and chemical sciences; engineering, earth and applied sciences; social sciences and humanities (see DEST 1994). At the April meeting each panel calls 30% of all applications in its field without use of external peer review. The remaining applications are sent for evaluation to assessors (including at least one nominated by the applicant). A further 30% of applications are deemed unsuccessful at the July meeting, when assessors' reports are available. Applications still under consideration are then allowed to provide the panel with a one-page response to comments made by assessors. In September each panel meets to rank all applications that survived the earlier calls. The lists from the different panels are then integrated by the Research Grants Committee (a constituent committee of the ARC), and forwarded by the ARC to the Minister. Applicants are advised in November as to whether their application is being funded, and the level of funding. Although it provides independent advice an allocation of research funds to the Minister, the ARC is otherwise operates as a Council of the National Board of Employment, Education and Training (NBBET). When the structure and functions of NBBET were recently under review, the ARC sought unsuccessfully to become a separate statutory body. The linkage between employment, education, and training created by government policy directives (eg, Dawkins 1988) thus remains, despite obvious tensions as to the extent priority should be given to basic research as opposed to applied research. However, the review recommended that the Employment, Education and Training Act 1988 be reworded "to ensure that fundamental research remains the key distinct priority for ARC, and is not to be traded off with allocations to applied research" (Wilbraham 1994, p. 50).

Problems with the Large Grants Scheme

Outcome reviews and surveys of ARC applicants have identified problems with the Large Grants Scheme relating to the composition and function of ARC panels, calling of applications without peer review, selection of assessors, the evaluative criteria employed by assessors, the manner in which panels reach funding decisions, the extent to which the ARC monitors progress, administrative of the Large Grants Scheme, and the level of demand for ARC funding. These issues are now addressed, and consideration is given to ways in which ARC processes might be changed.

Concerns identified in outcome reviews

The ARC has commissioned evaluation of grant outcomes in specific disciplines by experts. Australians and overseas, who themselves were ineligible to receive ARC funding. In identifying the ARC Large Grants Scheme as the primary Australian source (and in some cases virtually the only source) for funding basic research in their discipline, review committees have endorsed the use of peer review as the basis for allocating research funds. The general conclusion from the reviews has been that investigators supported under the Large Grants Scheme have been productive despite limited funding. However, the Materials and Chemical Engineering Committee claimed: "While the outcomes of the ARC funded research have been successful, it is not possible for the Committee to be certain that those funded were the best people in their respective fields."

Although commending the dedication and diligence of members of ARC panels, most reviews highlighted the difficulty panels face in evaluating applications when some disciplines are either not represented at all on the panel or are represented by a single member. As noted in the Mathematical Sciences review, "it is not in the interest of good management that an equitable outcome of the competitive process should rely heavily on the efforts of the individual involved." The review committees generally favoured discipline-specific expert panels (along the lines of the National Science Foundation, NSF) rather than the present system of broadly-based panels, although reliance on advisory groups (eg, for selection of assessors) in support of panels as presently constituted was seen as a feasible alternative.

A supplementary proposal was that several professional scientific positions (similar to NSF program managers) be established "to provide an informed interface between ARC and the research community". The critical issue is identified by review committees is the need to ensure that all applications receive expert evaluation. Matters of particular concern to review committees were excluding of applications...