

August 1996

Ref:

Realising our Potential Award (ROPA) Scheme - August 1996

A review of the ROPA Scheme

Introduction

As an innovative approach to responsive mode funding, the Realising Our Potential Award (ROPA) scheme has attracted much attention. It aims to enhance academe-industry collaboration by identifying academic researchers with a track record of collaborating and giving them opportunities to develop their own curiosity-driven ideas, in the hope of thereby catalysing opportunities for future collaboration; these aims have been generally welcomed. Targeting both basic research and the strategic goal of national wealth creation, the scheme has come to occupy a significant role in Government policy for the Science Base.

The scheme was launched with a pilot phase in Financial Year 1994/95, and extended to all Research Councils in Financial Year 1995/96. The Office of Science and Technology (OST) published a progress report on 19 October 1995 - *Report on initial experiences with the Realising our Potential Award Scheme (ROPA)*. The report concluded that even though it is too early to assess the overall outcomes of the scheme, the results so far are encouraging.

The ROPA scheme has, nevertheless, attracted controversy, with some members of the scientific community expressing concerns about its philosophy and its operation. The Royal Society therefore decided that an independent review at this stage would be helpful. It appointed a group to consider whether the objectives of the ROPA scheme were being achieved and the impacts, both positive and negative, of ROPAs on broader issues of Research Council funding. The remit recognised that the scheme could not be fully assessed until the outcomes of a sufficient number of ROPA-supported research projects were known, but that useful comments could still be made on the basis of evidence now available.

The Group was chaired by Sir John Horlock (Treasurer, Royal Society); other members were Professor John Enderby (University of Bristol), Professor Anthony Ledwith (Pilkington plc), Professor Robert Michell (University of Birmingham), Professor Ian Shanks (Unilever Research) and Sir John Skehel (National Institute for Medical Research). Miss Ruth Cooper was secretary. This report, issued as a statement by the Council of the Royal Society, is published to inform debate.

The Group took written and oral evidence from the Medical Research Council (MRC), Biotechnology and Biological Sciences Research Council (BBSRC), Natural Environment Research Council (NERC) and Engineering and Physical Sciences Research Council (EPSRC), and from the Director General of Research Councils (DGRC); written evidence from the Particle Physics and Astronomy Research Council

(PPARC) and the Economic and Social Research Council (ESRC); consulted the university sector and representatives of some 20 industrial companies active in Research and Development, and took oral evidence from members of the BBSRC ROPA Panel on Cells, and the MRC ROPA Panels on Molecules & Cells and Development & Inheritance.

Objectives of the ROPA scheme

The 1995 OST report stated that the scheme aimed to fulfil several purposes, as listed below (the numbers given in brackets refer to the paragraphs of the OST report from which they are taken).

a) To encourage academic researchers to collaborate with industry (15) and reward those already collaborating with industry (14).

(b) To strengthen the government's commitment to responsive mode, blue skies research (17), by providing grants for industry-supported academics to carry out undirected, curiosity-driven research (to recharge intellectual batteries (16)).

(c) To provide an alternative to conventional peer review which may not always be foolproof (63).

(d) To provide a scheme that required minimal administration (67).

A wider, implicit objective (e) was to attract applicants of the highest quality to participate in the ROPA scheme, thereby enhancing UK academic-industrial collaboration and helping achieve the objectives of the White Paper (*Realising our Potential*).

Academe-industry collaboration

The existence of the ROPA scheme, alongside other schemes such as CASE studentships and the LINK schemes, strengthens the message that academe-industry collaboration is central to Government policy for science.

The OST envisages that ROPAs may enhance the *quality* of academe-industry collaboration. They are about recharging intellectual batteries, in the expectation that new discoveries will be made, some of which will provide the basis for future collaborations with industry/commerce. Since ROPAs allow academic researchers already committed to industrial collaboration to develop novel lines of work, these researchers might as a result have more to offer to subsequent industrial collaborations.

Our industrial contacts were broadly supportive of the objectives of the ROPA scheme, but generally felt that it would have little impact on the *volume* of academe-industry collaboration. From industry's side, the scale of collaboration is driven primarily by the needs of the company, not the aspirations of the individual academic. Sir Richard Sykes, Deputy Chairman and Chief Executive of Glaxo Wellcome, told us: There is likely to be little scope for further improvement in the number of collaborations between pharmaceutical companies and academia, as they are already at a high level. A few academics had been stimulated by the ROPA scheme to approach Glaxo Wellcome for new collaborations, but all in areas irrelevant to company needs. Sir Richard suggested that a measure of success for the scheme would be whether it catalysed R&D collaboration in less research intensive

sectors; the indications from one such sector - the construction industry - are that there has been little significant change to date.

The scheme does provide a direct incentive to academe to seek collaboration with industry, since this buys entry to the ROPA application process and every potential source of funding has its attractions. But academic researchers not already involved in an eligible collaboration with industry have to invest time developing the necessary links before they can qualify for a ROPA.

Before the introduction of the ROPA scheme, UK industrial money going into (the pre-1992) universities for research grants and contracts had been increasing at an average rate of 9.6% p.a. in real terms, from £27M in 1982/83 (£47.7M in 1993/94 pounds) to £131M in 1993/94 (data from the Universities Statistical Record), though the rate of growth slowed during the recent recession. This increase has been driven by a variety of factors, and any additional impact of the ROPA scheme may be difficult to discern among them.

We note that OST has commissioned a survey of the extent to which the ROPA scheme has encouraged researchers to seek collaboration with industry for basic and strategic research. We look forward to seeing the findings in due course.

Concern has been expressed that the £25K p.a. from industry entry ticket skews the distribution of awards between disciplines. We share this concern - £25K p.a. is a large sum for some disciplines and some collaborators (particularly the smaller companies), but relatively easy to obtain in others. The success of the Royal Society Research Grants Scheme, which has an upper limit of £10K per grant, demonstrates the value to researchers of relatively modest sums of money. It is not clear what national strategic benefit can be derived from a central decision to fix the entry ticket at a level that might automatically disadvantage important sectors of collaboration. **We understand that Research Councils now have discretion to reduce the level of the entry ticket in special circumstances, and we welcome this.**

Concern has also been expressed over the narrow definitions of what, for the purpose of the ROPA scheme, counts as UK industry and eligible forms of collaboration. Strict Treasury rules on these points are inimicable to the spirit of ROPAs. **We would like to see the definitions of UK industry widened.**

Blue skies research

The ROPA scheme has been presented by OST as a means for channelling funding into responsive mode, blue skies research, especially speculative or unorthodox proposals that might be disadvantaged by the usual peer review process. It constitutes a strengthening of the Government's commitment to such research. Indeed, the essence of ROPAs is curiosity-driven speculative research (para 17 of the OST report).

Whether the ROPA scheme really is supporting blue skies research, and whether it is supporting blue skies research any more than the normal responsive-mode funding process operated by all Research Councils, cannot fully be judged until the results of ROPA-funded projects are available. The prima facie evidence suggests that only a small proportion of those projects are speculative fundamental research. However, we note that OST does not now regard a high degree of originality as a prerequisite; a ROPA applicant may propose something less speculative if s/he so wishes. This relaxation of the blue skies criterion reduces the strength of the initial scientific

distinction between ROPAs and the more traditional routes of responsive mode funding.

Peer Review

When announcing the ROPA scheme on 2 February 1994, William Waldegrave, the Chancellor of the Duchy of Lancaster, stated that the conventional peer review system will not be used. Instead, we shall take industry's recognition of the researcher as an indicator of his or her quality and commitment, although, of course, the researcher's proposals will need to be properly refereed, monitored and evaluated.

In its report *Peer Review - an assessment of recent developments (1995)*, the Royal Society commented that peer review, acknowledged to be the best general mechanism for judging the relative qualities of competing claims for research funding, was not faultless. We therefore agree that there is a case for allocating a small proportion of research grants by other mechanisms.

In essence, the award process adopted by the ROPA scheme involves applicants obtaining three ticks, for (a) satisfying the industrial funding entry requirement, and offering a research proposal that is (b) original and (c) technically feasible. There is no overt ranking of, or choice between, proposals that meet these basic requirements.

The industrial funding cited in support of a ROPA application has to be genuinely for basic or strategic research, rather than, for example, contract research. We strongly support this requirement and emphasise that information on the supported work should be judged by scientific panels rather than administrators.

The review schemes initially adopted by the different Research Councils for criteria (b) and (c) varied widely. The EPSRC used panels drawn from the existing colleges of referees, though some panels were much smaller than for normal responsive-mode grants. The ROPA panels set up by BBSRC and MRC were high powered and had reasonable scientific breadth, but were hampered by the lack of referees' opinions. We were told that panel members often felt restricted by not being allowed to give the same detailed scientific scrutiny to ROPA applications as was given to other applications. The method used by NERC, of a panel of four industrial scientists judging 64 applications without the benefit of referees' opinions, appears to have imposed a major load on members not fully qualified to assess the wide range of applications. Moreover, there is no obvious justification for exclusively using industrialists to judge the originality and feasibility of proposals in a scheme where direct relevance to industry is not a criterion. ESRC, MRC, NERC and PPARC (which handled less than one third of the applications) did not use referees, even though Mr Waldegrave had rightly stated that proposals would need to be properly refereed.

Overall, the ROPA assessment methods used to date have not all provided satisfactory alternatives to peer review. The OST report has recommended that scientific referees be used in all future rounds in addition to the expert panels, and we strongly support this. **The present system should be modified to allow full use of scientific referees and assessment of eligibility by the ROPA panels themselves.**

Minimal administration

The ROPA scheme meets the objective of minimal administration. It requires less administration than other responsive mode grant schemes, allowing the results of the applications to be notified approximately two months after the closing date. The six Research Councils use a common application form significantly shorter than those used for most other schemes. The use of panels rather than conventional peer review has also streamlined the administration.

These benefits will decrease slightly when referees are fully used in the assessment of all applications. However, the slight decrease in apparent cost-efficiency that the use of referees will cause will be more than justified by an increase in the scientific effectiveness of the scheme. This change will also help to reassure the scientific community about the quality of future ROPA awards.

Quality

Quantitative comparisons of quality are inherently difficult. The most readily available proxy measure in the context of the ROPA scheme is the RAE rating of the departments receiving the grants, particularly when no refereeing has been used. The following table demonstrates that across the Research Council system as a whole, the RAE distribution of ROPAs is almost identical to that of all other grants. This makes it **likely that the average quality of the research community gaining ROPAs is similar to that of researchers gaining other Research Council grants.**

These averages hide some variations between individual Research Councils. MRC, for example, awarded 55% of ROPAs to departments rated 4 and 5 (compared with 69% of other grants), and BBSRC awarded 18% of ROPAs to departments rated 5 (compared with 33% of other grants) (appendix 10 in the October 1995 OST report). These communities have also been particularly concerned about the quality issue.

As an adjunct to the quality issue, it would be useful to examine whether the ROPA scheme is attracting academic researchers who collaborate with industry but do not normally apply for Research Council grants: i.e. if it increases the pool of talented scientists within the Research Council clientele. This should be tested at an early opportunity.

General Comments

Success Rates

The success rate for applicants to Research Councils during the pilot (1994) and first full (1995) ROPA rounds was 47% (OST report, para xiv). This was about double the success rate for most responsive-mode schemes, and has been regarded by some as a criticism of the ROPA scheme. However, this finding should not be over-interpreted: success rates are influenced by many factors, including pre-selection, advertising and local encouragement. Low success rates drive up administrative costs without necessarily bringing a commensurate increase in quality. The success rate for the 1996 round was 28%.

Funding

The funding available for the scheme in 1995/96 was increased substantially compared with that available for the pilot scheme in 1994. However, the 1996/97

budget for full year funding for new ROPAs is 20% lower than the 1995/96 allocation, and the research areas eligible for ROPAs awarded in 1996/97 covered only part of the BBSRC, EPSRC and MRC remits.

MRC decided to cover its remit with the ROPA scheme over a three-year cycle. This meant that two scientific areas would be targeted in each of the three years. This was expected to help manage the demand for awards. BBSRC consider that ROPA funding should be gradually reduced. EPSRC intend to continue funding at their present level. NERC have been running the scheme for only one year (not having been involved with the pilot scheme) and thus consider it too early to assess the scheme's effectiveness.

The DGRC told us that there is no evidence that removal of the ROPA scheme would have made cash available to be spent elsewhere in the Science Budget. Every component of the budget has to be justified on its merits; the integral of the individual components makes up the final budget sum. There is no doubt that ROPAs were a factor in the success in achieving good results for the Science Budget in the last two years. He has indicated a likely commitment of 2.5% of the total Science Budget (i.e. about £34M at 1996/97 rates) to ROPAs in each of the next five years, with a steady state £15M p.a. on new awards. This implies that the annual spend on ROPA projects will be about 9% of total Science Budget spend on grants for research in the university sector. This may be a natural plateau for the scheme anyway, given current levels of academe-industry collaboration. **We regard this as an acceptable level, but would not wish to see it expand further.**

Conclusions and recommendations

(i) The ROPA scheme is an important experiment in public funding of the Science Base. It is therefore almost inevitable that some of its features should arouse controversy and be modified in the light of experience (e.g. the assessment procedures). As an experiment, it should continue to be monitored and should be independently evaluated in due course.

(ii) The quality of the research being funded by ROPAs is crucial both for the effectiveness of the scheme and for public confidence in it. Evidence on this will become available only as the results of ROPA projects are published. At that time, OST should commission an independent evaluation. This is essential to allay the fear expressed by some that work of second-rate quality has been supported by the ROPA scheme.

(iii) The DGRC has rightly emphasised that the Research Councils are responsible for identifying and supporting high quality research. The corollary is that they should have the freedom and flexibility to discharge this responsibility in running the ROPA scheme as they see fit, in the light of broad strategic objectives agreed with OST. For example, they should be able to adjust the entry ticket to the circumstances of their particular disciplines, and take local initiatives to encourage participation by younger scientists. The fact that they are now able to reduce the level of the entry ticket is a welcome step in this direction.

(iv) The present system of reviewing ROPA applications should be modified to allow full use of scientific referees and assessment of eligibility by panels.

(v) There are signals that the scheme will be maintained at or below its present size (£12-15M p.a. for new ROPA starts) until its results can be properly evaluated. We

support this: further growth at this stage would be unjustified. At about 9% of total research grant funding from the Science Budget, the scheme may already have reached, if not exceeded, its optimum long-term maximum size.

1. The ROPA scheme is intended to achieve, simultaneously, several distinct objectives: enhanced academe-industry collaboration, an increase in genuinely blue skies research, simpler administration, and an enlarged pool of Research Council supported scientists. We support these objectives. However, it may be advantageous to prioritise the ROPA objectives and focus the scheme on those of highest priority.