



# Application for Initial Support in 1990

When completing this form you must refer to the "Advice and Instructions to Applicants" document.  
Do not attach any papers to the front of this form. Applications must be typed.

Applications are to be lodged with the:

**Director, Research Grants Section  
Research Policy and Grants Branch  
Department of Employment, Education and Training  
GPO Box 9880  
CANBERRA ACT 2601**

**Office use only**

File number

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The closing date for applications is 1 April 1989.

**1. Institution to administer grant**

University of Wollongong
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**2. Project title**

Provide a project title that is clear, brief, precise and informative to workers outside your field.  
(Up to four lines; do not hyphenate words at the end of the line. Maximum of 38 characters per line.)

Scientific controversy and public decision-making
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**3a. Total funds requested in this application. (Whole dollars only)**

1990	1991	1992
32,408	36,294	

**See instructions for codes**

b. Category	National interest
734	

**4. Chief Investigator(s) - see instructions**

	1.	2.	3.
a. Title, initials and surname (eg. Prof, A/Prof, Dr)	Dr E. Richards	Dr B. Martin	Dr P. Scott
b. Full address	Department of Science and Technology Studies University of Wollongong, PO Box 1144, Wollongong NSW 2500		
	Telephone: (042)270627 Fax: 29022	Telephone: (042)270763 Fax: 29022	Telephone: (042)270601 Fax: 29022
c. Appointment held	Senior Lecturer	Lecturer	Lecturer
d. Name of Dept/School/Other (please indicate which)	Department of Science and Technology Studies		
e. Year of birth	1941	1947	1945
f. Academic qualifications (indicate conferring institutions and dates)	BSc, Queensland, 1965 PhD, UNSW, 1976	BA, Rice, 1969 PhD, Sydney, 1976	BPharm, Sydney, 1966 BA, UNE, 1979 PhD, Wollongong, 1987
g. Average working days per month to be devoted to the project	3	3	3

**5. Support**

Please tick if applying for support for this project in 1990 from    NH & MRC     NERDDC     Other

If you have ticked one of the boxes state the project title and the amount requested in Section 17.

**6. Work experiments**

Does the work proposed involve human or animal experimentation?    Yes     No

Does the work proposed involve experiments in which there is preparation or use of recombinant nucleic acids constructed *in vitro* from sources which do not ordinarily recombine genetic information?    Yes     No

**7. Interviews**

Will you be available for interview if required?    Yes     No     Uncertain

(See instructions for dates)

Note: An interview may be used in the assessment of a proposal. It does not indicate the progress or likelihood of success of the proposal.

**8. Chief Investigator Information**

For each Chief Investigator detail the following:

a. Indicate any anticipated period of absence from institution during the course of the project including OSP.

1.	2.	3.
Overseas study leave, January-June 1990		

b. What other major research programs are being undertaken or supervised by the Chief Investigator(s)?

1.	2.	3.
Social history of evolutionary biology	Social defence and technology policy	Social assessment of automatic vehicle identification

**Other Participants**

9. Provide details of the Associate Investigators

List:

- name
- organisation
- qualifications
- date conferred
- conferring institution
- involvement in the project (average days/month).

Certification required, see Section 19

10. What technical and other staff (other than those requested) will be available to assist with this project? Indicate the involvement in the project (average days/month).

11. Are you also applying to the ARC Fellowship Scheme? Yes  No

12. Will there be any research or honours students working on the project? Yes  No

If yes, state the number in each case.  
One PhD student

**13. Commencement/Completion date of project**

Has the project started? Yes  No  If no, when will it start?

How long will you need ARC support?  How long will this project take?

**14. Budget Information**

**3.**

Refer to the document 'Advice and Instruction to Applicants' for the completion of the budget information below.

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Detailed budget items	Priority for 1990	Amount requested			Office use only
		1990	1991	1992	
Research associate level 1, \$26,617 + 18% level 2, \$27,368 + 18%	1	31,408	32,294		
Travel: single return trip to nominated European country plus expenses			3000		
Computer searches, postage, photocopying	2	1000	1000		
<b>Total</b>		32,408	36,294		

**Financial Summary**

Support requested	Personnel \$	Equipment \$	Maintenance \$	Travel \$	Vessel \$	Other \$	Total \$
1990	31,408					1000	32,408
1991	32,294			3000		1000	36,294
1992							

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Surname of 1st Chief Investigator Richards	Administering institution University of Wollongong
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**Keywords**

Give up to five keywords to describe the subject area of proposal  
(maximum 20 characters per keyword)

controversy

decision-making

**15. Summary of project**

In the space provided below, write a summary in no more than seven lines, of why this project is of significance. This summary should be written in a style understandable to the intelligent reader. Use underlining, capital letters and any other emphasis only where required by convention eg. underline species names.

There is a compelling need for a comprehensive and generally acceptable analysis of the role of experts, interests, governments and the general public in social controversies involving vigorous conflicts over scientific knowledge. From previous detailed case studies, the investigators have developed a set of hypotheses about the nature of such controversies. Focussed investigation of further controversies will be used to test these hypotheses and develop policy recommendations.

**16. Aims, research plan, justification of budget, and relevant publications**

- To answer this question fully refer to the document 'Advice and Instructions to Applicants' so that you can cover the points specifically made in it, especially in relation to policy and priority information and in detailed justification of the budget proposal.
- Your explanation should be comprehensive but brief.
- **The council has ruled that no more than 12 pages, including this form, will be considered in the assessment process. Pages in excess will be discarded.**
- Use the following headings to detail your answer:
  - Aims
  - Research plan and timetable
  - Justification of Budget
  - Relevant publications
- Where the cooperation or assistance of another body is needed for the project to be successful, the council must be provided with appropriate details.

Surname of 1st Chief Investigator  
Richards

Administering institution  
University of Wollongong

## Total support

17. List separately the support received, requested or to be requested for this project from your own organisation and all other sources.

Name of organisation	1987 \$	1988 \$	1989 \$	Requested 1990
U Wollongong (E. Richards)			500	1000
U Wollongong (B. Martin)	1000		1000	1000
U Wollongong (P. Scott)		6500	1700	1500

18. List separately the support received for all your other projects for whatever the funding source. Continue on a separate sheet if necessary.

Name of organisation	1987 \$	1988 \$	1989 \$	Requested 1990
U Wollongong (E. Richards)		2000	2500	2500
U Wollongong (B. Martin)		1300	675	1500
ARGS (B. Martin)	10,000	10,000		
U Wollongong (P. Scott)			675	1500

## 19. Certification - to be signed by all applicants

I/We certify that all the details on this form are correct.

I/We understand and agree that:

- research which involves human or animal experimentation must be carried out in accordance with the guidelines laid down in the NH & MRC code of practice;
- research which involves the use of recombinant nucleic acids constructed *in vitro* from sources which do not ordinarily recombine genetic information must be carried out in accordance with the guidelines laid down by the Recombinant DNA Monitoring Committee;
- research which involves the use of ionising radiation must have the risks involved assessed by a recognised Ethics, Safety or Bio-safety Committee, personnel must be trained and hold a current licence, and;
- a certificate of compliance with the appropriate guidelines must be received by the Committee from a recognised Ethics, Safety or Bio-safety Committee before payment of any proposed grant can be made.

I/We declare that all persons listed as Associate Investigators have agreed to take part in the proposed research.

## Signature of Chief Investigators

1.  (Signature) 13 / 3 / 89 (Date)

2.  (Signature) 13 / 3 / 89 (Date)

3.  (Signature) 13 / 3 / 89 (Date)

## Certification by Head of Department

- I certify that the project can be accommodated within the general facilities in my Department, that sufficient working and office space is available for any proposed additional staff. I am prepared to have the project carried out in my Department under the circumstances set out by the applicant;
- I have noted the amount of time which the investigators will be devoting to the project and certify that it is appropriate to existing workloads.

Note: A confidential statement may be forwarded to the Committee if thought advisable. Refer to the 'Advice and Instructions to Applicants'.

..... (Signature) ..... / / (Date)

## Certification by Head (or Nominee) of Organisation/Institution

- I certify that the project is acceptable to the organisation under the terms and conditions set out in the Conditions of Award and Advice and Instructions to Applicants and that salaries quoted for personnel are in accordance with practice at this organisation;
- I certify that this project is not a specific component of this organisation's budget;

..... (Signature) ..... (Designation) ..... / / (Date)

Note: All certificates must be signed.

## Scientific Controversy and Public Decision-Making

### Aims

The central and increasingly contentious role of science and technology in modern society has given rise to numerous scientific and public controversies over scientific knowledge. Such controversies often have profound social, political and economic implications (e.g., the status of scientific claims about the 'greenhouse effect' are crucial in planning for Australia's future), and they have provoked major difficulties for informed decision-making and policy implementation. This project aims to develop an integrated and coherent approach to the analysis of such conflicts, and to address the social and policy implications of this research. It offers a unique opportunity for collaborative research in this socially significant area by a group of experienced researchers who bring to the project a number of independent in-depth analyses of a range of controversies:

1. Dr Richards has studied the debate over the efficacy of vitamin C in the treatment of cancer in the United States, Britain and Australia, comparing its evaluation with that of conventional cancer treatments, and examining the alleged finality of results from randomised controlled double-blind clinical trials and the role of the power of the medical profession and the alternative health movement in therapeutic evaluation. She has applied this analysis to the social implementation of medical therapies and technologies (see publications).

2. Dr Martin has studied the controversy over the fluoridation of public water supplies to prevent tooth decay, examining the knowledge claims deployed by proponents and opponents and the role of the power of the dental profession. This debate has been perhaps the most vociferously contested public health issue in recent decades in English-speaking countries, mobilising enormous passions and requiring continual involvement by government bodies. Dr Martin also has carried out a detailed study of the controversy over nuclear winter and the connection of scientific claims to military policy (see publications).

3. Dr Scott has studied the policy struggles and public debate over the Australian Animal Health Laboratory and the proposal to import live foot-and-mouth disease virus. The value of this major economic investment in Australian science has been contested by critics and thrown into doubt by the policy-making process itself (see publications).

It is our intention to employ a comparative approach to the meta-analysis of these previously-analysed controversies, and to extend this comparative analysis to other selected detailed controversy case studies, with a view to developing and testing a comprehensive policy-relevant model of controversy analysis.

Recent work in the sociology of scientific knowledge has undermined the standard view of such controversies, i.e., that science provides the 'facts' and that it is their evaluation from divergent value and ideological perspectives that results in contrary interpretations. According to the new 'social constructivist' approach (which is supported by an abundant and growing empirical literature, our own work included), scientific 'facts' cannot be dissociated from the vested interests and social objectives which they embody. It follows from this that we cannot arrive at a coherent understanding of scientific and technical disputes without recognizing the role of such interests and objectives in the construction of scientific and technical knowledge. Such controversies must therefore be treated as inherently social and political processes, where there are no impartial experts.<sup>1</sup> According to this revised view, the scientific expert must be seen as a

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<sup>1</sup> See for instance, H. M. Collins (ed.), 'Knowledge and Controversy: Studies of Modern Natural Science', *Social Studies of Science*, 11 (1981), 3-158; idem, *Changing Order* (London: Sage, 1985); R. Albury, *The Politics of Objectivity* (Geelong, Vic.: Deakin University Press, 1983); A. R. Pickering, *Constructing*

necessarily 'partisan participant' in a political debate, not as an apolitical arbiter of scientific or technical truth, and this implies a radical review of the expert's role in scientific and technical decision making. It also opens the way to a more active and acknowledged evaluative role for non-experts, for the public at large, in the processes of assessment and decision-making.<sup>1</sup>

This revised approach to controversy analysis has obvious and profound implications for the social implementation of science and technology. It also meshes with the growing public perception of the limitations of experts and expert knowledge in resolving issues of public controversy and with the increasing demand for greater public involvement in the decision-and policy-making processes.<sup>2</sup> However, to date, there has been little attempt in the literature to apply the social constructivist approach to policy. In large part, this is because of the exclusive focus of most constructivists on micro-level action and interaction between actors and groups within the scientific community, and their characteristic avoidance of the roles of wider power structures in the shaping and 'closure' of scientific and technical controversies.<sup>3</sup> Our studies have the special value of critically engaging both with the 'inside' disputed scientific or technical knowledge and with the 'outside' politics of competing interest groups, of integrating the investigation of both science and politics. This integrated approach, we argue, is crucial to the application of controversy analysis to realistic policy-making and regulatory intervention. There is a need to build upon such studies with detailed reconstructions of selected controversies which extend the social constructivist analysis from the microsociological to the larger structural levels. These controversies will be selected on the basis of their topic, locale, style, and policy relevance, so as to give as broad an empirical basis as possible to the project. As the results of their analyses become available, they will be systematically incorporated into the ongoing meta-analysis of our previously-analysed controversies.

Preliminary comparative analysis of these prior studies reveals a number of common features. If these were to be substantiated, they would have wide implications for science policy dealing with contested scientific knowledge claims. We propose to test these hypotheses by seeing whether they can be sustained within the contexts of other controversies which are distinctly different in topic, locale, or style. These tentative hypotheses and the methods of testing them are as follows:

1. The status of individuals who make claims about scientific knowledge are crucial resources in scientific controversies.

**Test** Locate instances where the personal authority of the 'expert' is given precedence over the detailed technical merits of the disputed knowledge; look for attacks on the personal credibility of individuals in the course of debates, in articles and in circulation of dossiers and other damaging information, instead of or in addition to criticisms of the arguments raised by these individuals.

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Quarks: A Sociological History of Particle Physics (Edinburgh: Edinburgh University Press, 1984); T. Pinch, Confronting Nature: The Sociology of Solar-Neutrino Detection (Dordrecht: Reidel, 1986);

<sup>1</sup> See E. Richards, 'The Politics of Therapeutic Evaluation: The Vitamin C and Cancer Controversy', Social Studies of Science, 18 (1988), 653-701.

<sup>2</sup> See H. Tristram Engelhardt and A. L. Caplan (eds.), Scientific Controversies (Cambridge: Cambridge University Press, 1987); A. Mazur, The Dynamics of Technical Controversy (Washington, DC: Communications Press, 1981); D. Nelkin (ed.), Controversy: Politics of Technical Decision (Beverly Hills: Sage, 1979).

<sup>3</sup> For a critique of the analytical underdetermination of micro-sociological accounts of scientific and technical knowledge, see B. Martin, 'Analyzing the Fluoridation Controversy: Resources and Structures', Social Studies of Science, 18 (1988), 331-63; S. Russell, 'The Social Construction of Artefacts: A Response to Pinch and Bijker', Social Studies of Science, 16 (1986), 331-46.

2. There is no scientific experiment or evidence which is treated as definitive by all parties to a scientific controversy.

**Test** Determine the experiments and evidence considered definitive by each side in the controversies under analysis, and then study the criticisms of these by the opposing parties.

3. The party to the controversy with the greatest institutional connections (government, industry, professions) will discourage or avoid discussion of conflicting scientific knowledge claims in public forums.

**Test** Determine the key forums for public discussion (e.g. newspapers, public debates, journals), and look for participation by the party with greatest institutional connections in presentations including both sides. Also, examine recommendations concerning participation in open debates with opponents.

4. Partisans will prefer a method of resolving the controversy which gives them an advantage. In particular, public participation will be recruited by experts only when this participation can be used as a resource in pushing the case for their side.

**Test** Look at the methods preferred by partisans for resolving the conflict and, in particular, when and how public involvement is fostered or discouraged by the conflicting parties to the dispute.

5. Analysts of controversies will be recruited by the party to the controversy that can most easily use their work to undermine the credibility and claims of the other side.

**Test** Examine the use of social science studies in controversies: reference to such studies in partisan literature, invitations to give talks, partisan positions adopted by social scientists.

6. Closure of controversies is not brought about solely by a definitive set of experiments, evidence, etc.; social and political constraints exerted by the adjudicating community are crucial.

**Test** Examine the processes of controversy closure, and look for instances where experiment, evidence, etc. are sufficient to explain closure without need to invoke relevant social and political explanations of such closures.

**In summary, the aims of the project are:**

- to test hypotheses about the role of scientific knowledge claims in public controversies;
- to spell out the implications of verified hypotheses for science policy-making.

## **Research plan and timetable**

The core of the project is the detailed study of several new controversies in order to test the hypotheses above. From our experience, we consider that a minimum time for obtaining and sifting through the evidence on any given controversy is six months. Accordingly, we have set aside 18 of the 24 months time for a research associate for investigating three new controversies.

Prior to this is selection of the three controversies. The first six months of the research associate's time are to be devoted to a general survey of controversies and controversy studies.



In particular, the aim here is to obtain a good feel for the variety of sciences, styles and institutional locations in which controversies take place. This search is relatively straightforward, since we are concerned with controversies with significant public dimension. The experience of the chief investigators will guide this search.

After six months, we would expect to be able to select three controversies for detailed study. One of the key criteria for selection is that the controversies be as different as possible from the ones we have studied already. For this reason we expect that at least one controversy be centred in a European country where the political structure is significantly different from the English-speaking countries where the controversies we have already studied have taken place.

The next 18 months will be taken up by detailed study of the three controversies selected. Collection of material will be by computer searches, obtaining primary sources available in the public domain, and writing to key participants to obtain documents and comments. Once the material is obtained, it will be closely studied, focussing especially on data relating to the hypotheses. The research associate should be able to take some initiative in carrying out the search and studying the materials; the chief investigators will be involved in guiding the search, formulating questions when querying partisans by mail or in person, guiding the study of the materials, and assessing the crucial documents. During this time, one of the chief investigators will visit the key partisans in the European controversy selected. (If any leading partisans in any of the three controversies are resident in Australia, they will be interviewed in person or by phone.)

During and after this study of the three controversies, the chief investigators will assess the validity of the hypotheses and develop their implications for science policy-making. This latter task will involve an assessment of models of social and political decision-making, such as top-down decision-making (synoptic rationality), incremental methods or 'muddling through', the 'science court', and 'policy juries'. After researching the theory and practice of such methods, each one will be examined using the insights from the case studies. This work by the chief investigators will take place during the entire project, including after the research associate has completed work.

### **Justification of budget**

The largest item in the budget is the salary for a research associate for two years. This level of appointment is necessary to obtain a person able to digest complex information about controversies and to assess its relevance to the hypotheses. This process involves understanding the interactive politics of power and scientific knowledge claims, and would likely be beyond the ability or experience of a research assistant. The requirement for two years salary derives from the minimum of six months to study each controversy, plus six months to survey the field of controversies and select the three most appropriate ones.

The travel component is dominated by one trip to Europe for one chief investigator; this is essential for the contrast between the dynamics of controversies in English-speaking and European social systems is to be probed.

The remainder specified is for computer searches, postage and photocopying, for collecting the large amount of material about each controversy.

## Publications, 1986-

### Controversy studies

Evelleen Richards, 'Vitamin C suffers a dose of politics', *New Scientist*, Vol. 109, 1986, pp. 46-49.

Evelleen Richards, 'The politics of therapeutic evaluation: vitamin C and cancer', *Social Studies of Science*, Vol. 18, 1988, pp. 653-701.

Brian Martin, 'Science policy: dissent and its difficulties', *Philosophy and Social Action*, Vol. 12, No. 1, January-March 1986, pp. 5-23.

Brian Martin, 'Agent Orange: the new controversy', *Australian Society*, Vol. 5, No. 11, November 1986, pp. 25-26.

Brian Martin, 'Coherency of viewpoints among fluoridation partisans', *Metascience*, Vol. 6, No. 1, 1988, pp. 2-19.

Brian Martin, 'Analyzing the fluoridation controversy: resources and structures', *Social Studies of Science*, Vol. 18, May 1988, pp. 331-363.

Brian Martin, 'Nuclear winter: science and politics', *Science and Public Policy*, October 1988, Vol. 15, No. 5, October 1988, pp. 321-334.

Gabriele Bammer and Brian Martin, 'The arguments about RSI: an examination', *Community Health Studies*, Vol. 12, No. 3, 1988, pp. 348-358.

Pam Scott, 'Dealing with dissent: on the treatment of opposition to the Australian Animal Health Laboratory and the importation of live FMD virus', *Search* Vol. 19, No.1, Jan/Feb 1988, pp. 6-9.

Pam Scott, 'Row over animal health laboratory to drag on', *NSW Farmer*, Vol 2, No 3, April 1988, p.21.

Pam Scott, 'The social shaping of a laboratory: the establishment of the Australian Animal Health Laboratory', *Prometheus*, Vol 6, No.2, December 1988, pp. 249-262.

### In press and submitted

Evelleen Richards, *Vitamin C and Cancer* (London: Macmillan, to appear).

Brian Martin, 'The sociology of the fluoridation controversy: a re-examination', *Sociological Quarterly*, in press.

Pam Scott, 'Culling technological white elephants', *Science and Public Policy*, in press.

Pam Scott, 'AAHL: a regional role?' *Australian Veterinary Journal*, in press.

Pam Scott, 'Levers and counterweights: a laboratory that failed to raise the world', submitted to *Social Studies of Science*.

### Other publications

Evelleen Richards, 'A question of property rights: Richard Owen's evolutionism reassessed', *British Journal for the History of Science*, Vol. 20, 1987, pp. 129-172.

Brian Martin and Evelleen Richards, 'Introducing women in science', *Philosophy and Social Action*, Vol. 14, No. 2, April-June 1988, pp. 3-6.

Gabriele Bammer, Ken Green and Brian Martin, 'Who gets kicks out of science policy?', *Search*, Vol. 17, Nos. 1-2, Jan-Feb 1986, pp. 41-46.

Brian Martin, 'Bias in awarding research grants', *British Medical Journal*, Vol. 293, 30 August 1986, pp. 550-552.

Brian Martin, 'Nuclear suppression', *Science and Public Policy*, Vol. 13, No. 6, December 1986, pp. 312-320.

Brian Martin, C. M. Ann Baker, Clyde Manwell and Cedric Pugh (eds.), *Intellectual Suppression: Australian Case Histories, Analysis and Responses* (Sydney: Angus & Robertson, 1986), including the following chapters: Brian Martin, C. M. Ann Baker, Clyde Manwell and Cedric Pugh, 'Introduction', pp. 1-7; Brian Martin, 'Science policy under the whip', pp. 79-86; Brian Martin, 'Mutagens and managers', pp. 123-129; Brian Martin, 'Archives of suppression', pp. 164-181; Brian Martin, 'Elites and suppression', pp. 185-199, reprinted in *Philosophy and Social Action*, Vol. 12, No. 2, April-June 1986, pp. 31-50; Brian Martin, C. M. Ann Baker, Clyde Manwell and Cedric Pugh, 'Options for dissidents', pp. 243-252; Brian Martin and Clyde Manwell, 'Publicising suppression', pp. 253-256; Brian Martin, 'Suppression and social action', pp. 257-263.

Brian Martin, 'Suppression in science', in Barry Butcher et al., *Science in Culture* (Victoria: Deakin University, 1986).

Brian Martin, 'Nuclear disarmament is not enough', *Peace Studies*, No. 3, June/July 1986, pp. 36-39.

Jill Bowling, Brian Martin, Val Plumwood and Ian Watson, 'Strategy against nuclear power', *Social Alternatives*, Vol. 5, No. 2, April 1986, pp. 9-16.

Brian Martin and D. T. Wickramasinghe, 'A test of the dipole model for the rotating magnetic white dwarf Feige 7', *Astrophysical Journal*, Vol. 301, 1 February 1986, pp. 177-184.

D. T. Wickramasinghe and Brian Martin, 'Magnetic blanketing in white dwarfs', *Monthly Notices of the Royal Astronomical Society*, Vol. 223, 1986, pp. 323-340.

Jacki Quilty, Lynne Dickins, Phil Anderson and Brian Martin, *Capital Defence: Social Defence for Canberra* (Canberra: Canberra Peacemakers, 1986), 68 pages. Also published in Italian as *Un Modello di Difesa Popolare Nonviolenta* (Molfetta: Edizioni la Meridiana, 1987).

Brian Martin, 'Merit and power', *Australian Journal of Social Issues*, Vol. 22, No. 2, May 1987, pp. 436-451.

Brian Martin, 'Academic scapegoats', *Zedek*, Vol. 7, No. 3, August 1987, pp. 476-481.

Brian Martin, 'Social defence: elite reform or grassroots initiative?', *Social Alternatives*, Vol. 6, No. 2, April 1987, pp. 19-23. Reprinted in *Civilian-based Defense: News & Opinion*, Vol. 4, No. 1, June 1987, pp. 1-5. Reprinted in Dutch in *Geweldloos Aktief*, Vol. 23, No. 2, June 1988, insert pp. 1-7.

Brian Martin, 'The Nazis and nonviolence', *Social Alternatives*, Vol. 6, No. 3, August 1987, pp. 47-49.

Brian Martin, 'The issue of intellectual suppression', *Philosophy and Social Action*, Vol. 14, No. 1, January-March 1988, pp. 3-13.

Brian Martin, 'Education and the environmental movement', in Tom Lovett (ed.), *Radical Approaches to Adult Education: A Reader* (London: Routledge, 1988), pp. 202-223.

Brian Martin, 'Queensland versus Greenpeace: the Vega affair', *Gijutsu to Ningen (Technology and Humanity)*, June 1988, pp. 71-79 (in Japanese).

Brian Martin, 'The limitations of bilateral peace treaties', *Social Alternatives*, Vol. 7, No. 2, June 1988, pp. 37-41.

Brian Martin, 'Mathematics and social interests', *Search*, Vol. 19, No. 4, July/August 1988, pp. 209-214.

Brian Martin, 'Lessons in nonviolence from the Fiji coups', *Gandhi Marg*, Vol. 10, No. 6, September 1988, pp. 326-339.

#### In press and submitted

Evelleen Richards, 'The "moral anatomy" of Robert Knox: the interplay between biological and social thought in Victorian scientific naturalism', *Journal of the History of Biology*, in press.

Evelleen Richards, 'Huxley and woman's place in science: the 'woman question' and the control of Victorian anthropology', in James Moore (ed.), *History, Humanity and Evolution* (Cambridge: Cambridge University Press, in press).

Evelleen Richards, 'Metaphorical mystifications: the Romantic gestation of nature in British biology', in Andrew Cunningham and Nick Jardine (eds.), *Romanticism and the Sciences* (Cambridge: Cambridge University Press, in press).

Evelleen Richards and John S. Schuster, 'The feminine method as myth and accounting resource: a challenge to gender studies and the social studies of science', *Social Studies of Science*, in press.

Brian Martin, 'Computing and war', *Peace and Change*, in press.

Brian Martin, 'Gene Sharp's theory of power', *Journal of Peace Research*, in press.

Colin Kearton and Brian Martin, 'Technological vulnerability: a neglected area in policy-making', *Prometheus*, in press.

Colin Kearton and Brian Martin, 'The vulnerability of steel production to military threats', *Materials and Society*, in press.

**Last page. Attach at back of application. Must be a separate sheet.**

Office use only - File number

## 20. Nomination of Assessors

Nominate up to three persons who are qualified to assess the project and are not associated with it.

### Applicant

Surname of 1st chief investigator Richards	Institution University of Wollongong
Project title Scientific controversy and public decision-making	

### Nominee 1

Surname Mendelsohn	Initial E	Title Prof
Postal address History of Science, Harvard University Cambridge MA 02138, USA		
		Postcode
Reason for nomination Key scientific controversy researcher		

### Nominee 2

Surname Albury	Initial R	Title Prof
Postal address School of Science and Technology Studies University of NSW, PO Box 1, Kensington NSW 2033		
		Postcode
Reason for nomination Author and editor of works in the area		

### Nominee 3

Surname Lowe	Initial I	Title AProf
Postal address Science Policy Research Unit, Griffith University, Nathan Q 4111		
		Postcode
Reason for nomination Researcher and writer in area		

Where you do not want the council to use a particular assessor(s), nominate the person(s) and provide a brief outline of the reason.

Surname anonymous	Initials	Title
Reason Ill-informed assessor's comments on last year's application (see correspondence with ARC)		

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