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**Application for Large Grant Support in 1997**

When completing this form, please refer to the "ARC/DEET Individual Grants Programs: Guidelines for 1997 Grants."

**Applications must be lodged through your University Research Office by Friday 16 February 1996.**

Applications must be printed and must be lodged by **1 March 1996** with the:  
**Individual Grants Section**

Please direct any inquiries, in the first instance to your University Research Office. **Direct**

DEET contact details:  
 Telephone: (06) 240 9694  
 Facsimile: (06) 240 9781  
 E-mail: RBLARGE@DEET.GOV.AU

**Research Branch (Location 731)**  
**Department of Employment, Education and Training**  
**GPO Box 9880, CANBERRA ACT 2601**

Late applications will not be accepted.

**1. Institution to administer grant**

**2. Total funds requested in this application**

University of Wollongong

1997	1998	1999
48,455	50,183	51,910

**3. Project title (Short descriptive title of no more than 20 words in length. Please do not use quotation marks.)**

Communication technology and nonviolent struggle

**4. Project summary (Provide a summary of the project that is no more than 100 words in length. The summary should be intelligible to a lay reader, and presented in clear, concise and suitable terms for inclusion in publications. Please do not use quotation marks.)**

Organised nonviolent struggle, as an alternative to military methods, can be greatly aided by appropriate communication technology. The project involves investigating a number of communication systems—including the post, radio, television, telephone, fax and computer networks—to assess their relevance to nonviolent struggle. The findings will be used to determine what specific measures can be taken to adapt, promote or develop communication technology to serve the purposes of nonviolent struggle.

**5. Research codes (Refer to the Appendices C, D, E and H in the Guidelines for codes)**

Field of Research Classification							%	Socio-Economic Objectives						%	Category Code			
1	1	9	9	9	9		80	2	0	0	1	0	0		40	7	1	1
0	5	0	4	9	9		20	1	0	0	2	0	0		40			
								1	5	9	9	0	0		20			

  

Priority Area (Please mark the appropriate box(es))								Special Interest Code					
BOS	CIT	GEO	FST	MIN	OPT	TEC	INT	If INT, please specify country			MLT	MEM	SPC
						x							

**6. Key words (Please specify up to six key words to describe the subject of this proposal. They should be of the form normally required for submission of an article for publication in a major refereed journal.)**

1	nonviolent action	4	telecommunications
2	technology policy	5	
3	communication technology	6	

**7. Chief Investigators/Partner Chief Investigators**

**7.1 Details**

(Strike out Chief or Partner as appropriate)

Title (eg. Prof, A/Prof, Dr)	1st Chief Investigator		2nd Chief/Partner		3rd Chief/Partner	
	Initials and Surname	Dr B Martin				
Current appointment /year	Senior Lecturer					
Department/School/Other	Science and Technology Studies					
Institution	University of Wollongong					
Is this person	Male	<input checked="" type="checkbox"/> Female	Male	<input type="checkbox"/> Female	Male	<input type="checkbox"/> Female
Date of birth (dd/mm/yy)	14/02/47		/ /		/ /	
Average working days per month to be devoted (max. of 21 days/month)	this	all other projects	this project	all other projects	this project	all other projects
	8	8				

**7. Chief Investigators/Partner Chief Investigators (continued)**

**7.1 Details (continued)**

(Strike out Chief or Partner as appropriate)

	1st Chief Investigator	2nd Chief/Partner	3rd Chief/Partner
Contact details: Address	Department of Science and Technology Studies, University of Wollongong, NSW 2522		
Telephone (+ area code)	(042) 213763/287860		
Facsimile (+ area code)	(042) 213452		
E-mail address	b.martin@uow.edu.au		
Highest academic qualification: Degree type Year conferred Conferring institution Country	PhD 1976, University of Sydney		

**7.2 Are you receiving research support from any of the programs/organisations listed below? If Yes, brief documentation demonstrating that the proposed research is not part of the organisation's approved research plan and that you have the time and capacity to undertake this project, should be provided.**

Program/Organisation	1st Chief		2nd Chief/Partner		3rd Chief/Partner	
	Yes	No	Yes	No	Yes	No
Special Research Centre						
Key Centre for Teaching and Research						
Cooperative Research Centre						
National Health and Medical Research Council						
Defence Science and Technology Organisation	People from these organisations are not eligible to be the first named Chief Investigator					
C'wealth Scientific & Industrial Research Organisation						
Australian Institute of Marine Science						
Institute of Advanced Studies, ANU						
Other Government funded or partly Government funded R & D organisation Please specify:						
Documentation attached for research support received						

**7.3 Please indicate source of salary and % from each source for each Chief/Partner**

1st Chief Investigator		2nd Chief/Partner		3rd Chief/Partner	
Source of salary	%	Source of salary	%	Source of salary	%
University of Wollongong	100				

**7.4 What other major research programs are being undertaken or supervised by each Chief/Partner?**

1st Chief Investigator Program Name	2nd Chief/Partner Program Name	3rd Chief/Partner Program Name
Suppression of dissent		
Average days per month spent on these programs	8	Average days per month spent on these programs

**5. Other project participants**

**5.1 Associate Investigators**

*Provide details of any Associate Investigators to be involved in the project.)*

	Associate Investigator 1	Associate Investigator 2	Associate Investigator 3
Name <i>(if known)</i>			
Current appointment/year			
Department/School/Other			
Institution			
Highest academic qualification: Degree type Year conferred Conferring institution Country			
Date of birth (dd/mm/yy)	/ /	/ /	/ /
Is this person	Male <input type="checkbox"/> Female <input type="checkbox"/>	Male <input type="checkbox"/> Female <input type="checkbox"/>	Male <input type="checkbox"/> Female <input type="checkbox"/>
Is funding sought for salary or part-salary in this application?			
Average working days per month to be devoted to the proposed project			

**5.2 Other participants**

*Provide details of any other participants (eg. technical, research or other staff, postgraduate research or honours students) to be involved in the project. Please show numbers and the level of involvement (average days/month)*

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**6. Other support**

**6.1 Are any of the Chief Investigators or Partner Chief Investigators applying for support for this, or a closely related, project in 1997 from any other source(s)?**

Yes  No

If Yes, please specify:

Chief/Partner involved	1st Chief Investigator	2nd Chief/Partner	3rd Chief/Partner
Funding source(s)			
Requested amount			
Support period			
Administering			

**6.2 Is this application associated with an ARC/DEET Research Fellowship application?**

Yes  No

If Yes, please specify:

Name of the Fellowship applicant

Type of Fellowship sought

SRF

ARF/QEII

APD

If you are awarded a Large Grant, is the success of your research proposal dependent on the outcome of this Fellowship application?

Yes  No

**6.3 Does this application seek funding for a Research Associate or a Senior Research Associate?**

Yes  No

If Yes, please specify: research associate

Name, if known

(position to be advertised)

Salary level of proposed appointment

\$37,345

Is the need for this salary dependent on the outcome of another application?

Yes  No

## 0. Budget information

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Detailed budget items	Priority	Amount Requested		
		1997	1998	1999
<i>Personnel</i> Research associate + 26% on-costs	A	47,055	48,783	50,510
<i>Other</i> Postage, fax, telephone (for simulations)	C1	1000	1000	1000
<i>Travel</i> Train trips to Sydney, bus trips to Canberra	C2	400	400	400

**Financial summary**

Support requested	Personnel \$	Equipment \$	Maintenance \$	Travel \$	Other \$	Total \$
1997	47,055			400	1000	48,455
1998	48,783			400	1000	50,183
1999	50,510			400	1000	51,910

Please ensure that the totals of this financial summary are the same as the totals shown in question 2

Surname of Chief Investigators/Partner Chief Investigators	Institution
1st Chief Investigator	Martin University of Wollongong
2nd Chief/Partner	
3rd Chief/Partner	

**1. Total support for this project or closely related project(s)**

List the current support received, requested or for which a submission is planned in the near future for each Chief Investigator/Partner Chief Investigator from their own organisations and all other sources, **excluding this application.** (Continue on a separate sheet if necessary.)

Chief/Partner Surname	Source of support and title of project	Support type (C, R or P) <sup>1</sup>	1995 \$	1996 \$	1997 \$

<sup>1</sup>“C” is for current support, “R” is for support that has been requested, “P” is for submissions planned in the near future.

**2. Total support for all other projects**

List the current support received, requested or for which a submission is planned in the near future for each Chief Investigator/Partner Chief Investigator from their own organisations and all other sources, **excluding this application.** (Continue on a separate sheet if necessary.)

Chief/Partner Surname	Source of support and title of project	Support type	1995 \$	1996 \$	1997 \$

<sup>1</sup>“C” is for current support, “R” is for support that has been requested, “P” is for submissions planned in the near future.

**3. Is/was this project funded as a Small Research Grant?**

Yes  No

If Yes, please specify:

Year(s) of support

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Please attach any previous assessment(s), if available.

**4. Commencement/completion of the proposed project**

Has the project started? Yes  No  If no, when will it start? (mm/yy)

How long will you need ARC support? (number of years)

How long will this project take? (number of years)

## 5. Consent to refer application

Do you consent to this application, supporting documentation and associated assessments being referred to other funding agencies for consideration?

Yes  No

## 6. Statutory requirements

Does the research involve:

- |   |     |                          |    |                                     |
|---|-----|--------------------------|----|-------------------------------------|
| a) importation of experimental organisms? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| b) human subjects?                        | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| c) animal experimentation?                | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| d) deposition of biological materials?    | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| e) genetic manipulation?                  | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| f) ionising radiation?                    | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |
| g) social science data sets?              | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> |

## 7. Benefits of research

Please outline in dot form how this project relates to the five benefits of research specified in the Guidelines, p.24)

- **Contributions to the quality of our culture** Dialogue and discussion are the foundation both of democracy and of nonviolent action. By providing insights into technologies most appropriate to foster dialogue and discussion, the research will contribute to the creation of a technological infrastructure for a democratic society.
- **Direction applications of research results** The results will provide both specific recommendations and methods for technological choice relating to communication, applicable at the levels of government, organisations and individuals.
- **International links** The method of carrying out the research involves developing and building international links for the purpose of simulations with communication technology. These links will build on existing links with nonviolence researchers in several countries.

## 8. Aims and expected outcomes

Please outline in dot form the aims and expected outcomes of the project. These should be in a form that can be used to evaluate the effectiveness of the research project and the research team when the project is completed.)

### Aims

- To provide theoretical insight into how the selective usefulness of technology grows out of its relationship to social structure and circumstance.
- To provide a set of priorities for adapting or introducing communication technologies for nonviolent struggle.
- To provide methodological guidance for users of nonviolent action for investigating communication technologies.

### Expected outcomes

- Publication of a book and a number of articles on: (a) the social shaping of communication technologies and their selective usefulness for violent and nonviolent struggle; (b) techniques for testing the usefulness of telecommunications technology for nonviolent struggle; (c) technology policy recommendations for communication and nonviolent struggle.
- A network of nonviolence practitioners with experience in using and thinking about the use of communication technology in their activities.

### 9. Certification for Chief Investigators and Partner Chief Investigators

I certify to the best of my knowledge that:

1. all the details on this application form are true and complete; and
2. I have complied with the Guidelines and, if I am successful, I will accept the Conditions of Award relating to ARC/DEET Large Research Grants; and
3. I understand and agree that all statutory requirements, as itemised in the application form, must be met before payment for the proposed research can be made; and
4. all persons listed in this application form as Associate Investigators have agreed to take part in the proposed research.

I authorise \_\_\_\_\_ to sign all subsequent documentation relating to this application on my behalf.  
(insert name)

### Signatures of Chief Investigator/Partner Chief Investigators

1st Chief Investigator's signature

Date

2nd Chief Investigator/Partner Chief Investigator's signature

Date

3rd Chief Investigator/Partner Chief Investigator's signature

Date

### 10. Certification by Head of Department

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

**Note:** A confidential statement may be forwarded if thought advisable.

Signature

Date

Name

Position

**Note:** All certificates on this page must be signed and dated

**1. Aims, expected outcomes, significance, research plan, justification of budget, timing, and a statement of track record for each Chief Investigator/Partner Chief Investigator.**

- To answer this question fully, you should refer to the "ARC/DEET Individual Grants Programs: Guidelines for 1997 Grants" so that you can cover the points specifically raised in the application content section for Large Research Grants, especially in relation to the policy and priority information and the detailed justification of the budget proposal.
- Your explanation should be comprehensive but brief.
- In addition to the application form itself, no more than eight pages, excluding progress reports and abbreviated curriculum vitae, will be considered in the assessment process, except in the case of proposals requesting over \$100,000 in the first year or involving more than two Chief Investigators /Partner Chief Investigators, where the page limit is ten pages. Pages in excess of the limit may be removed and not considered by the Panel or assessors.
- Use the following headings to detail your answer:
  1.  Aims, expected outcomes and significance
  2.  Research plan, methods and techniques
  3.  Justification of the budget
  4.  Proposed timing
  5.  Track record, providing a statement relative to the opportunities available.

**2. Checklist for completeness**

A complete application package consists of the original and ten copies of the required documentation, which should be lodged in the following order. Please mark the appropriate boxes.

- Application form**  
Please ensure that all questions have been answered and that all certificates have been signed and dated.
- SUPPORTING DOCUMENTS TO BE SUBMITTED WITH THE APPLICATION FORM**
- Aims, expected outcomes, significance, research plan, justification of budget, timing, and a statement of track record - page limits apply (see above)**  
PLUS, WHERE APPLICABLE
- Research support being received from programs/organisations specified in question 7.2**  
Brief documentation demonstrating that the proposed research is not part of the organisation's approved research plan and that the Chief Investigators/Partner Chief Investigators have the time and capacity to undertake the project, should be provided.
- Small grant assessments, if available**
- Progress reports**
- Abbreviated curriculum vitae for each named investigator**  
Provide details of career history, awards and distinctions and list all refereed publications over the past five years (1991 to 1995) highlighting publications relevant to this project.
- Funding contingent on support from elsewhere**  
Where the cooperation or assistance of another research body and/or Partner Chief Investigator(s) is needed for the project to be viable, please provide supporting documentation. (eg. contribution by Partner Chief Investigator(s); matching institutional funding for large equipment items.)
- Attach extra copy of budget (page 4) as second last page of original only**
- Attach nomination of assessor form as last page of original only**



### **Category of project**

The project is multidisciplinary, mainly growing out of the fields of peace research and technology studies, both falling into the “social science (other)” category. Its connection with the main thrust of the field of communication studies is more distant.

### **Aims, expected outcomes and significance**

The aim of this project is to investigate how communication technologies can be used for nonviolent struggle and what can be done, socially and technologically, to make them more useful. Simultaneously, an assessment will be made of the ways in which communication technologies have been shaped by military and other priorities and how this affects their value for nonviolent struggle. This in turn will allow the development of a framework for communication policy for nonviolent struggle.

Specifically, the project aims to provide theoretical insight into how the selective usefulness of technology grows out of its relationship to social structure and circumstance. It will provide a set of priorities for adapting or introducing communication technologies for nonviolent struggle. Finally, it will provide methodological guidance for users of nonviolent action for investigating communication technologies.

One anticipated outcome is publication of a book and a number of articles on: (a) the social shaping of communication technologies and their selective usefulness for violent and nonviolent struggle; (b) techniques for testing the usefulness of telecommunications technology for nonviolent struggle; (c) technology policy recommendations for communication and nonviolent struggle. As well, the process of carrying out the project will help to build a network of nonviolence practitioners with experience in using and thinking about the use of communication technology in their activities.

The project has a two-fold significance, theoretical and practical.

**Theoretical significance** There is a long tradition of investigations into social influences on the development of science and technology. The normal approach is to examine closely the social history of particular scientific theories and technological artefacts to determine the degree to which they have been influenced or ‘shaped’ by economics, class structure, ideologies, etc.<sup>1</sup> The limitation of this approach is that there is seldom any assessment of the sort of science and technology that might otherwise have been developed.

This project approaches this issue by looking at the usefulness of communication technologies, which have been shaped by various influences (including military applications), for an alternative purpose, namely nonviolent struggle. This approach is pioneering theoretically, since most analysts have simply examined science and technology within existing social structures, and have not postulated a radically different goal as the basis for examining social influences.

As well, there is a more specific theoretical issue. One analysis of communication technology concludes that broadcast media such as radio and television are more useful for the purposes of centralised control than network media such as the telephone. Yet in some prominent examples of nonviolent resistance, such as the Czechoslovak resistance to the 1968 Soviet invasion, broadcast media have been central to the popular nonviolent struggle. Resolving this apparent paradox will throw light on how the selective usefulness of technology grows out of its relationship to social structure and circumstance.

**Practical significance** There is a small but thriving field of study in nonviolent resistance to aggression. However, very little has been done in this field to study the relevance of science and technology for nonviolent resistance and, quite surprisingly, very little on communication. The project will continue a pioneering effort within the tradition of research into nonviolent action. The results of this project will provide practical guidance for a reorientation of communication technology for defence.

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1. Barry Barnes, *Scientific Knowledge and Sociological Theory* (London: Routledge and Kegan Paul, 1974); Donald MacKenzie, *Inventing Accuracy: An Historical Sociology of Nuclear Missile Guidance* (Cambridge, MA: MIT Press, 1990); Donald MacKenzie and Judy Wajcman (eds), *The Social Shaping of Technology* (Milton Keynes: Open University Press, 1985); Michael Mulkay, *Science and the Sociology of Knowledge* (London: Allen and Unwin, 1979).

## Background<sup>2</sup>

There are numerous methods for nonviolent struggle, including petitions, marches, rallies, strikes, boycotts, sit-ins and setting up alternative institutions.<sup>3</sup> These methods can be used to directly oppose a military invasion or coup, by directly hindering the aggressor. But perhaps more important is the role of nonviolent action in undermining support for the aggressor, whether that support is in the country under threat, in the home country of the aggressor, or among the troops themselves. The use of nonviolent community resistance to aggression as an alternative to military defence is often called social defence.<sup>4</sup>

A number of historical examples give a taste of what a nonviolent resistance would be like, such as the Finnish resistance to pressures from Russia from 1899-1905, German resistance to the occupation of the Ruhr in 1923, the collapse of the 1961 coup in Algeria and the defeat of the 1991 Soviet coup. Such examples cannot prove the effectiveness of social defence but do indicate possible methods of struggle using nonviolent action. Most importantly, in each of these cases the resistance was spontaneous: there was no advance planning for nonviolent struggle. Judging social defence by spontaneous uses of nonviolent action would be like judging military defence by uses of violence in which there was no military production, no military training and no advance planning.

It is in this context that research and development for nonviolent resistance become important. In any systematically planned programme of social defence, technology has an important role to play.<sup>5</sup> My previous ARC research on this topic was the first systematic study of this issue. Nearly every field of knowledge is potentially involved. For example, manufacturing engineers can help design factory systems that cannot easily be taken over by an aggressor. Agricultural research can be used to develop food production systems that are less vulnerable to disruption. Architects can design buildings that foster community solidarity. Power engineers can develop energy systems that are resilient against attack.

It became apparent during the course of this study that for the purposes of nonviolent struggle, the single most important area of technology is communication. There are many examples in which a top priority of military rulers is to control communication. In the cases of the Indonesian invasion of East Timor in 1975, the military coup in Poland in 1981, and the Beijing massacre in 1989, attempts were made to cut off communications with the 'outside world.' One of the first things commonly done in a coup d'état is to occupy radio and television stations.

Communication is crucial to legitimacy in modern society. If social defence is to work, it must both have effective communication systems of its own and be able to disrupt the communications of the aggressor. It is crucial to maintain communication with people in other countries. Knowledge of what is 'really going on' is usually extremely damaging to the aggressor. Genocides are usually carried out in secrecy.<sup>6</sup>

There are numerous important areas in computers and communications worthy of development for social defence: nonjammable broadcasting systems; cheap and easy-to-use short-wave radio; miniature video recorders; encrypted or hidden communications via

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<sup>2</sup>. The core ideas leading to this application have been published in Brian Martin, 'Science for nonviolent struggle', *Science and Public Policy*, vol 19, no 1, February 1992, pp. 55-58.

<sup>3</sup>. Gene Sharp, *The Politics of Nonviolent Action* (Porter Sargent, Boston, 1973).

<sup>4</sup>. Anders Boserup & Andrew Mack, *War Without Weapons: Non-violence in National Defence* (Frances Pinter, London, 1974); Robert Burrowes, *The Strategic Theory of Nonviolent Defense* (Albany: State University of New York Press, 1995, in press); Gustaaf Geeraerts (ed.), *Possibilities of Civilian Defence in Western Europe* (Swets and Zeitlinger, Amsterdam, 1977); Gene Keyes, 'Strategic non-violent defense: the construct of an option', *Journal of Strategic Studies*, vol 4, pp. 125-151 (1981); Stephen King-Hall, *Defence in the Nuclear Age* (Victor Gollancz, London, 1958); Johan Niezing, *Sociale Verdediging als Logisch Alternatief* (Van Gorcum, Assen, Netherlands, 1987); Michael Randle, *Civil Resistance* (London: Fontana, 1994); Gene Sharp, *Making Europe Unconquerable: The Potential of Civilian-based Deterrence and Defense* (Ballinger, Cambridge, Mass., 1985); Gene Sharp, *Civilian-Based Defense: A Post-Military Weapons System* (Princeton: Princeton University Press, 1990).

<sup>5</sup>. Johan Galtung, *Peace, War and Defense: Essays in Peace Research, Volume Two* (Christian Ejlert, Copenhagen, 1976), 378-426 is one of the few authors to discuss this issue, and then only in a few paragraphs.

<sup>6</sup>. Leo Kuper, *Genocide* (Penguin, Harmondsworth, 1981).

computers, telephone and radio; ways of destroying or hiding computer information. Some relevant systems already exist but are not widely available or known, such as micropower radio.

### **Personal background**

This proposal brings together two strands of research that have occupied much of my attention for many years: the social shaping of science, and social defence. I have a long experience in examining social influences on science,<sup>7</sup> including considerable attention to science, technology and warfare.<sup>8</sup> This is aided by the insights gained from over a decade of postdoctoral research experience as a research scientist, 20 years of applications programming and authorship of 35 scientific papers in several fields (stratospheric modelling, numerical methods, astrophysics, wind power and electricity grids) in addition to my more extensive research in the social sciences.

I have extensive experience in interviewing in a range of areas, including technical specialists at BHP (in collaboration with Colin Kearton), fluoridation partisans, and scientists and engineers. This, plus my long experience in working in science departments and collaborating with a considerable number of scientists, provides an ideal background for dealing with technical experts in communication and with technical information as required by the project.

I have been involved in the study of nonviolent alternatives to military defence since the late 1970s and have written extensively on this topic.<sup>9</sup> I have been a leader in several group projects which involved interviewing people (such as public servants, tradespeople and computer programmers) about what can be done to oppose an invasion or military coup.<sup>10</sup> This sort of investigation into the practicalities of nonviolent defence is highly regarded overseas where the usual approach is advocacy at the level of ideas. My background, involving both extensive interviewing and theoretical analyses in relation to nonviolent defence, gives me uniquely relevant knowledge and skills for carrying out the proposed project.

My background in examining social influences on science and technology motivates the theoretical aim of assessing the usefulness of science and technology, shaped by military influences, for nonviolent struggle. My background in social defence provides the motivation for studying means for nonviolent struggle.

My research has been translated and published in seven foreign languages, and my work on social defence in particular is widely recognised internationally.

### **Progress report**

My current project, "Science and technology for nonviolent struggle," funded by the ARC for 1993-1995, has laid the groundwork for the proposed, more specific project on communication technology. Research assistant Mary Cawte and I searched through the literature on nonviolent struggle, finding but a few references to science and technology. We developed a new framework for analysing the potential relevance of different scientific fields to nonviolent struggle. We interviewed quite a number of scientists and engineers and also

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<sup>7</sup>. Brian Martin, 'The selective usefulness of game theory', *Social Studies of Science*, vol. 8, 1978, pp. 85-110; Brian Martin, *The Bias of Science* (Canberra: Society for Social Responsibility in Science, 1979); Jill Bowling and Brian Martin, 'Science: a masculine disorder?', *Science and Public Policy*, vol. 12, December 1985, pp. 308-316; Brian Martin, 'Mathematics and social interests', *Search*, vol 19, no 4, July-August 1988, pp. 209-214; and others.

<sup>8</sup>. Brian Martin, 'Science and war', in Arthur Birch (ed.), *Science Research in Australia* (Canberra: Australian National University, 1983), pp. 101-108; Brian Martin, 'Computing and war', *Peace and Change*, vol. 14, April 1989, pp. 203-222.

<sup>9</sup>. Brian Martin, 'Mobilizing against nuclear war', *Social Alternatives*, vol 1, nos 6-7, June 1980, pp. 6-11; Brian Martin, 'Grassroots action for peace', *Social Alternatives*, vol 3, no 1, October 1982, pp. 77-82 (also published in Swedish and Japanese); Brian Martin, *Uprooting War* (London: Freedom Press, 1984) (also published in Italian); Brian Martin, *Social Defence, Social Change* (London: Freedom Press, 1993); and others.

<sup>10</sup>. Jacki Quilty et al., *Capital Defence: Social Defence for Canberra* (Canberra: Canberra Peacemakers, 1986) (also published in Italian and Dutch); Alison Rawling et al., 'The Australian Post Office and social defence', *Nonviolence Today*, no 14, April-May 1990, pp. 6-8. Schweik Action Wollongong (Brian Martin, member), 'Telecommunications for nonviolent struggle,' *Civilian-Based Defense: News & Opinion*, Vol. 7, No. 6, August 1992, pp. 7-10. A project on bureaucracy and nonviolence, in collaboration with Sharon Callaghan and Christine Fox, was recently completed. Currently, with Helen Gillett and Chris Rust, I am studying social defence and the built environment.

obtained valuable comments by posting queries on computer conferences. Somewhat surprisingly, we found a majority of useful ideas by searching through a variety of journals in many different fields. In addition, we initiated some investigations, especially on radio, to determine how technologies were shaped historically to be used the ways that are familiar today.

Our conclusions include the following:

- Most science and engineering is not helpful for nonviolent struggle. This isn't surprising, considering that nonviolent struggle has never been a research and development priority, whereas military goals often have been.

- Given that psychological and organisational elements are generally more important than other elements in a social defence system, social sciences are much more important for nonviolent struggle than natural sciences and engineering.

- There are a few areas where science and engineering can make a big difference, notably survival and communication.

- The "scientific method" for testing technology for nonviolent struggle inherently involves popular participation much more than for the case of military systems. Separating technology from social dynamics is more obviously nonsensical in nonviolent than violent approaches to conflict.

- For converting technologies from military to nonviolent purposes, the highest priority should be utilising presently available technologies and the lowest priority should be developing new theories. This is the reverse of the tendency of the limited government funding available for social defence, which has been more for research than application.

- The most effective way to gain information about science and technology for nonviolent struggle is to relate the issue to current concerns in a field. The case of encryption in telecommunications is a good example.

We have aimed at publishing articles in a variety of fields, partly because the research crosses many boundaries and partly in order to stimulate responses from a variety of researchers. We have published or submitted articles to journals in the fields of nonviolence,<sup>11</sup> peace research,<sup>12</sup> engineering,<sup>13</sup> science and technology studies,<sup>14</sup> and communication.<sup>15</sup> Several more articles are under way, and a book manuscript is currently being circulated for comment before submission to a publisher in March/April.

### **Research plan, methods and techniques; timetable**

The research will be carried out in part using traditional methods of searching and studying various literatures and of interviewing key individuals. In addition, the topic lends itself to an exciting version of action research, which might be called reflexive action research. What this means is that ideas and information about the use of communication media for nonviolent struggle will be sought by actually running simulations of communication media, as described below. In outline, the research will be carried out in the following stages.

1. Detailed study of the dynamics of communication technology in relation to both violent and nonviolent struggle, based on literature searches, interviews, and queries via computer (18 months).

2. Reflexive action research on selected communication technologies (6 months).

3. Formulation of principles and priorities for communication technology policy for nonviolent struggle (6 months).

4. Writing up findings (6 months).

The first two stages will provide the basic data for the project. The third stage uses this data to explore the theoretical and policy issues about the social shaping of science and technology. The second and fourth stages are concerned with organising the results into relevant and communicable form.

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<sup>11</sup>. Mary Cawte, 'Rebellious occupied territories,' *Civilian-Based Defense*, Vol. 8, No. 6, Winter 1993-94, pp. 10-13.

<sup>12</sup>. Mary Cawte, 'Research proposals for nonviolent defence: strategy and tactics. A review article of *Research on Civilian-Based Defence* by Giliam de Valk,' *Pacifica Review*, vol 6, no 1, May-June 1994, pp. 95-106.

<sup>13</sup>. Brian Martin, 'Engineers and nonviolent struggle,' *Engineers Australia*, December 1993, pp. 36-37.

<sup>14</sup>. Brian Martin, 'Science, technology and nonviolent action: the case for a utopian dimension in the social analysis of science and technology,' *Social Studies of Science*, accepted for publication.

<sup>15</sup>. Brian Martin, 'Communication technology and nonviolent action,' *Media Development*, 1996, in press.

**1. Detailed study of the dynamics of communication technology in relation to both violent and nonviolent struggle.** Several key communication media will be selected: the post, telephone, radio, television, fax and computer networks. For each one, a study of the history and dynamics of technological development will be carried out, with special attention to relevance of the technology to violent and nonviolent struggle. We will not actually be writing a history, but rather using historical and contemporary accounts to gain insights into the sociotechnical dynamics of the medium under scrutiny. For example, without doing a comprehensive history of the postal system, it is still possible to learn about how what originally was a highly insecure system serving mainly the purposes of the crown in Britain came to be a more secure and reliable system due to commercial and popular pressures. Note will be made of any direct military influence on the communication technologies, and also of uses of the technologies for nonviolent struggles.

This study of the history and dynamics of technological development will take about twelve months spread throughout the three years but concentrated towards the beginning. It will draw on prior familiarity with much of the key literature and go far beyond a literature review to produce an analysis that provides guidance for the interviews and simulations. Much of this work will be done by the research associate under guidance.

Next, a series of interviews will be held with managers, specialist technologists and workers concerned with each of the technologies. They will be asked how the technological system might be used for nonviolent struggle and, more specifically, how it might be adapted or changed to make such struggle more effective. To prompt discussion along these lines, we will raise ideas obtained from the literature as well as from our own assessments, plus ideas from previous interviewees. It is anticipated that there will be about 60 interviews. Some will take place in Wollongong and Sydney. Others at greater distance can be carried out by phone, electronic mail, etc. The Chief Investigator and the research associate will carry out some interviews together and some individually. Going by previous experiences, I anticipate that many international specialists will contribute.

The process of finding suitable interviewees will vary between media. For example, in the case of radio, initial interviews will be with existing contacts involved with community radio, short-wave radio, and mainstream radio. Those interviewed will be asked to suggest other suitable interviewees. This process will be continued until “convergence” is reached, namely that there is substantive agreement or resolution concerning technical issues.

**2. Reflexive action research on selected communication technologies** The plan for this stage is to run limited simulations of communication in nonviolent struggle as a means of obtaining information about the strengths and weaknesses of the technological system—computer network, telephone, short-wave radio, etc.—for the purposes of nonviolent struggle, and also to determine how such simulations can spread the idea of social defence.

Consider, for example, the case of computer networks. The simulation will be designed to test the aspects of computer networking found through the literature and interviews to be both strengths and weaknesses for the purposes of nonviolent action. First, a plan for the simulation will be drawn up, with a proposed scenario, method and criteria for evaluation. Second, individuals and groups will be approached to participate in the simulation, beginning with contacts in the Australian Nonviolence Network and also social defence contacts in countries such as Canada, England, Italy and the Netherlands, as well as computer system administrators and other relevant individuals. The plans for the simulation will be revised in the light of comments from likely participants. Third, the simulation itself will be run: sending of communications in a ‘crisis,’ with some individuals playing the role of antagonists or spoilers who might fail to respond, send disinformation, cause technical failures, etc. Finally, the simulation will be evaluated using the previously agreed criteria.

The simulation is a form of action research<sup>16</sup> and in this case will be a form of communication itself, hence the qualifier “reflexive.” The simulation will involve not only

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<sup>16</sup> Some examples, from a variety of fields, include Stephen Kemmis and Robin McTaggart (eds.), *The Action Research Planner* (Geelong, Victoria: Deakin University, 1988, 3rd edition); Robert A. Rubinstein, ‘Reflections on Action Anthropology: Some Developmental Dynamics of an Anthropological Tradition,’ *Human Organization*, Vol. 45 (Fall 1986), 270-279; Alain Touraine, *The Voice and the Eye: An Analysis of Social Movements* (Cambridge: Cambridge University Press, 1981); Yoland Wadsworth, *Do It Yourself Social*

people already familiar with social defence but others who are invited to join in. Given earlier experience with social defence projects, this will not be difficult to organise. A follow-up survey will be used to determine what understanding these new people have gained about nonviolent struggle. Most importantly, the simulation will provide insights about the practicality of the ideas developed through the literature search and interviews. Thus, it provides a “reality test” for what is otherwise a theoretical investigation.<sup>17</sup>

Although a simulation may seem to be an application rather than research per se, in this case it is profoundly theoretical. The simulation will provide insight into the relation between theory and practice, which itself is one of the central theoretical issues in social defence. It is also of central importance for developing policy on communication technology for nonviolent struggle, which is the task of stage 3.

**3. Formulation of principles and priorities for communication technology policy for nonviolent struggle.** The information from stages 1 and 2 provides the basis for specifying priorities for how communication technology should be adapted or developed in order to improve the capacity for nonviolent struggle. This involves examining the resources, supporters and opponents of making changes towards communication technologies more suited for nonviolent struggle and then assessing which particular initiatives should have highest priority. The principles at this stage refer to general ways to assess communication technology in this regard; these can also be applied to new future technologies. Existing literature on science policy provides relatively little guidance for initiatives that can come from the community rather than just government or industry, hence much of this work involves developing new frameworks.

It is during this stage that the findings from stages 1 and 2 will be used to draw conclusions concerning the selective usefulness of communication technologies—that is, the specific features of their non-neutrality. This theoretical issue is implicit in the design of stages 1 and 2 and dealing with its implications is essential to this stage’s task of formulating principles and priorities.

**4. Writing up of findings.** Findings will be published as the research proceeds, in a range of journals, including peace research, social studies of science, information technology, communications, etc. A major outcome will be a book reporting policy-relevant findings. Thus this “stage” will be spread across most of the three years of the project. At well as formal academic publications, there will be “publication” via computer conferences and other media studied and used during the project.

### **Justification of budget**

The main item in the budget is the salary for a research associate for three years. This level of appointment is necessary to obtain a person able to understand communication technology in a wide range of areas and as well the theoretical issues involved in both the social shaping of science and technology and the principles of nonviolent action. Within the basic structure of the project, the research associate will be expected, with guidance and assistance from the chief investigator, to investigate the history and dynamics of several communication technologies, arrange interviews with specialists and participate in interviews, take interview notes and classify the results according to the theoretical framework utilised.

The research associate will need the experience and understanding to assess written material in its connection to theoretical frameworks, to quickly grasp the essentials of new areas of science and bodies of social science theory, to be a sensitive interviewer and to participate in preparing material for publication. It is most unlikely that a suitable qualified and committed person could be attracted to a fractional appointment.

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*Research* (Melbourne: Victorian Council of Social Service, 1984); William Foote Whyte (ed.), *Participatory Action Research* (Newbury Park, CA: Sage, 1991); Trevor Williams, *Learning to Manage our Futures: The Participative Redesign of Societies in Turbulent Transition* (New York: Wiley, 1982).

<sup>17</sup> The pioneering social defence simulation at Grindstone Island, Canada—see Theodore Olson and Gordon Christiansen, *Thirty-One Hours* (Toronto: Canadian Friends Service Committee, 1966)—provided penetrating insights into the social psychology of nonviolent resistance.

The need for three years' salary is based on the timetable, which essentially specifies 18 months for looking at communication technologies for nonviolent and military struggle, 6 months for reflexive action research, 6 months for developing the principles and priorities and 6 months for writing up. Since this is pioneering work, this is a minimum requirement for satisfactory completion of the project.

The remainder of the budget is for computer searches, postage, photocopying and local travel to carry out interviews.

## Publications, 1991-

### *Core of the project*

Brian Martin, Communication technology and nonviolent action. *Media Development*, 1996, in press.

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Brian Martin. Science for non-violent struggle. *Science and Public Policy*, Vol. 19, No. 1, February 1992, pp. 55-58. Reprinted in *Philosophy and Social Action*, Vol. 18, No. 3, October-December 1992, pp. 7-12 and, in abridged form, in *SANA Update*, No. 104, October 1992, pp. 13-14.

Brian Martin. Engineers and nonviolent struggle. *Civil Engineers Australia*, Vol. 65, No. 14, December 1993, pp. 36-37.

### *Relevant to the project*

#### *(a) nonviolent struggle*

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Schweik Action Wollongong (Lisa Schofield, Brian Martin, Rosie Wells, Terry Darling and Debra Keenahan). Social defence and community empowerment. *Australian Social Work*, Vol. 47, No. 1, March 1994, pp. 48-54.

Schweik Action Wollongong (Brian Martin, member). Telecommunications for nonviolent struggle. *Nonviolence Today*, No. 27, July/August 1992, pp. 19-23, and *Civilian-Based Defense: News & Opinion*, Vol. 7, No. 6, August 1992, pp. 7-10.

Brian Martin. Social defence: arguments and actions. In: Shelley Anderson and Janet Larmore (eds.), *Nonviolent Struggle and Social Defence* (London: War Resisters' International, 1991), pp. 81-141. Reprint in Norwegian forthcoming.

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David Dingelstad, Richard Gosden, Brian Martin and Nickolas Vakas. The social shaping of drug debates. *Social Science & Medicine*, accepted for publication.

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Brian Martin and Evelleen Richards. Scientific knowledge, controversy, and public decision-making. In Sheila Jasanoff, Gerald E. Markle, James C. Petersen and Trevor Pinch (eds.), *Handbook of Science and Technology Studies* (Thousand Oaks, CA: Sage, 1995), pp. 506-526.

Brian Martin. Anarchist science policy. *The Raven*, Vol. 7, No. 2, Summer 1994, pp. 136-153.

Brian Martin. Polio vaccines and the origin of AIDS: the career of a threatening idea. *Townsend Letter for Doctors*, No. 126, January 1994, pp. 97-100.

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Brian Martin. Scientific fraud and the power structure of science. *Prometheus*, Vol. 10, No. 1, June 1992, pp. 83-98.

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