Brian Martin, *Social Defence, Social Change*
(London: Freedom Press, 1993)

11
Science and technology for nonviolent struggle

It is often noted that one quarter to one half of scientists and engineers worldwide are engaged in military-related research and development. This includes work on nuclear weapons, ballistic missiles, biological toxins, the psychology of fighting groups, and technologies for crowd control, electronic surveillance and torture. Critics argue that these scientists should be working instead on nonmilitary projects in food production, health, transportation, education and a host of other topics.[1]

For scientists, the choice seems to be between research for war and research for something else unrelated to dealing with conflict. It is uncommon for those who oppose military research to be able, through their scientific investigations, to promote some alternative means for promoting security.

Many of the things done by scientists in the peace movement do not require scientific training: holding meetings, writing letters, lobbying, joining rallies. Many concerned scientists write articles and information sheets about technical topics such as nuclear and chemical weapons. Still, this seldom has much direct connection with their ongoing research. When scientists take a stand against weapons of mass destruction, their impact stems more from the symbolic value of being scientists than from laboratory research.

[1] Seymour Melman, *The Demilitarized Society: Disarmament and Conversion* (Montreal: Harvest House, 1988).

One exception to this pattern was the boycott by many scientists of participation in work related to the Strategic Defence Initiative. But the idea of a boycott of star wars research was not accompanied by an equally well-defined idea of alternative research.

One of the reasons why it is difficult to replace "science for war" with "science for peace" is that most strategies for peace rely on strictly diplomatic or political measures which pay no special concern to science. Peace treaties, disarmament proposals, common security measures and world government rely largely on the talents of diplomats, negotiators, politicians and, sometimes, social scientists. There are a few cases, such as the Pugwash movement, in which scientists and engineers use their specialist skills to help develop arms control measures. But most natural scientists are left to sit at the sidelines and wait for the agreements.

Social defence, by contrast, is an alternative to war that has a significant potential role for scientists and technologists.[2] It is useful to consider a number of different areas.

Industry. Often one of the main aims of an aggressor is to take control of industry. Therefore it is important for managers and/or workers to be able to shut down production. This was certainly a goal of many resisters to the Nazis in occupied Europe, 1939-1945. But what if the aggressors torture the workers or their families to force them to keep production going? One solution is to design manufacturing systems to include vital components which, if destroyed, cannot easily be replaced. Spares could be kept in a safe place, such as another country. Torture would not help to replace the components, and would become pointless.

In some industries, a better strategy might be to decentralise production so that it would be difficult for an aggressor to "take control" easily. It might be desirable for small-scale operations to be able to be easily disabled but also to be easily re-enabled.

On the other hand, in some cases the aggressor may wish to destroy industrial facilities in order to subjugate the population. In such cases, it would be important to develop systems that are resistant to sabotage by outsiders.

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2 Johan Galtung, *Peace, War and Defense: Essays in Peace Research, Volume Two* (Copenhagen: Christian Ejlers, 1976), pp. 378-426.

There are numerous industrial design problems requiring research and development. It should be clear that these problems cannot be addressed as isolated technical puzzles. The meshing of technical and social domains is crucial, and close consultation would need to be made with workers and others.

Food, energy, shelter, transport. Against a ruthless aggressor, pure and simple survival becomes important. Basic services need to be maintained. Since some aggressors have tried to starve a population into submission, it is important to be prepared.

Large-scale monocultures are vulnerable to disruption. A more resilient food system would include many local gardens and food-bearing trees. Relevant research here includes seed varieties robust to lack of fertilisers and pesticides, nutritious diets from wild natives, and methods for long-term storage of food. Much "groundwork" in this area has been carried out by the permaculture movement.

Centralised energy supplies, such as power plants, are highly vulnerable. Small-scale renewable energy systems are much more resilient. As well as continuation of current studies of such systems, there needs to be investigation of systems that could be maintained in the face of hostile action. Easily repairable systems would be highly desirable. Similar considerations apply to shelter and transport.

Health. Social defence is based on nonviolent action by the defenders, but there may still be violence by the aggressors. For example, in the intifada, many unarmed Palestinian resisters have been severely beaten or killed by Israeli troops. (Many proponents of social defence argue that nonviolence by one side *reduces* the likelihood or severity of violence by the other side.)

In such a situation, it becomes important for there to be medicines and medical techniques that can be easily administered by non-specialists. There need to be strategies to maintain health in the face of occupation, food shortages, curfews, harassment and other contingencies. As well as physical health, psychological well-being is crucial.

It is also useful to be able to determine whether torture has been used, and to authoritatively show this to a wide audience. Demon-

strating the violence of the aggressor is an enormously powerful technique.

Communications. There are a host of important areas in computers and communications worthy of development for social defence: nonjammable broadcasting systems; cheap and easy-to-use short-wave radios; miniature video recorders; encrypted or hidden communications via computers, telephone and radio; ways of destroying or hiding computer information. Some relevant systems already exist but are not widely available or known. (See the next chapter for a fuller discussion.)

The psychology of aggressors and resisters also needs attention. Studies in the psychology of obedience and resistance need to aim at insights that can be readily learned and applied by citizens.

Conclusion

Social defence provides an alternative agenda for scientific research and technological development. So far, though, almost nothing has been done along these lines. The problem runs deep, since whole fields of science have arisen because of military spin-offs; these fields have little positive potential. Other fields, which would be highly useful for social defence, have never been developed because funding is not available.

A social defence research and development programme would be quite inexpensive compared to existing military R&D. Yet, while money has continued to flow for military-related research, there has been little money for science and technology for nonviolent resistance. At the beginning of the 1980s, the Netherlands government courageously initiated a social defence research programme, although funding for only one of the many planned projects was eventually provided.[3]

Governments are unlikely to initiate a major switch in research funding towards social defence. The most likely source of change is scientists and technologists themselves, who can pursue projects that aid the effectiveness of nonviolent struggle. Supporters can

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[3] Advisory Group on Research into Non-violent Conflict Resolution, *Research into Non-Violent Conflict Resolution and Social Defence: A Detailed Research Programme* (Amsterdam: Netherlands Universities' Joint Social Research Centre, 1986).

aid the process by contacting scientists, telling them about social defence, asking them what things they would be able to do, suggesting some projects and seeing what they think, asking them to suggest other scientists to talk to, and getting their help in searching scientific and technological publications.

In the longer term, an orientation to social defence rather than military defence implies dramatic changes to science and technology. There would be, inevitably, major changes in priorities for research and development, because the likely applications would be quite different. In order for this to happen, the present influence over priorities by governments, corporations, militaries and scientific elites would need to be replaced by a much greater influence by a range of individuals and community groups. There would also need to be a change in the actual activity of research and development, loosening the monopoly by career professionals and allowing greater participation by those who are currently "nonscientists."[4]

If defence is to become a matter for popular participation rather than for state elites and professional soldiers, then, in a similar fashion, science and technology for nonviolent struggle should become much more participatory in all senses: in the way priorities are set, the way resources are provided and the way the work is actually done.

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[4] Brian Martin, *The Bias of Science* (Canberra: Society for Social Responsibility in Science, 1979), part V.