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Introduction

Let's begin with two bold propositions. First, methods of social action without violence can be extremely powerful—indeed so powerful as to be a possible alternative to military defence. Second, technology, which is now massively oriented to military purposes, can be reoriented to support nonviolent action.

These two propositions, if followed through, lead to two striking conclusions. First, nonviolent struggle, which is normally seen as primarily a social and psychological process, has vital technological dimensions. Second, reorienting technology to serve nonviolent struggle would involve a wholesale transformation of research directions, technological infrastructure and social decision making.

This is a quick overview of the task ahead in this book. The rest of this introduction provides a more measured approach to key ideas. It is useful to begin with weapons of war.

War has always involved suffering and death. Centuries ago weapons included swords, bows and arrows, catapults and battering rams, enough for plenty of killing. Today's weapons include rifles, tanks, giant battleships, aircraft for saturation bombing, precision-guided missiles, landmines, and biological, chemical and nuclear weapons.¹ Some types of weapons are much more powerful than in the past, while others are entirely new. It is now much easier for military forces to kill large numbers of people. Civilians are at much greater risk than in earlier eras, in part due to the development of antipersonnel weapons such as cluster bombs.² The rapid developments in technology for warfare over the past few centuries have relied on the dedicated efforts of scientists and engineers.

One of the biggest problems with science and technology is their use in war. In 1975, prominent philosopher Arne Naess listed 13 "current main grievances against science" which he considered to be justified and important. Second on his list was this: "Leading scientists take part in creating new terrible and ecologically devastating

ways of warfare. Scientists support any state or regime if sufficiently rewarded. Some serve the State through research on how to torture, and take part in international teaching on how to torture without organized opposition from colleagues.”³

In 1978, 26 individuals associated with the World Order Models Project, an initiative seeking to develop visions of and methods to achieve a better world, endorsed a statement entitled “the perversion of science and technology.” Focussing on the impact of science and technology on the Third World, the statement listed the following problem as one of the initial four points: “the employment of 50 percent of all research scientists in the world in military R&D [research and development]; a significant proportion of that number for developing the technology of mass destruction and repression.”⁴

In earlier eras, it was possible to imagine that military technologies could be a source of liberation as well as oppression. The sword and the rifle can be used not only by rulers but also against them.⁵ But it is difficult to imagine cluster bombs and nuclear weapons being used for popular liberation. Modern weapons are mainly of use by governments against peoples, often against their own populations.

What is the alternative to military science and technology? The most common response of the world’s governments is to seek controls, such as treaties against biological weapons or agreements on numbers of nuclear missiles. Such reforms are welcome enough but do little or nothing to stem the development of ever more sophisticated weapons. Indeed, some critics argue that arms control negotiations serve only to regularise military races, not to halt them.⁶

Whereas most governments seek only those limited controls on weapons to which they agree, peace movements around the world have called for disarmament and totally getting rid of certain types of weapons, particularly nuclear, biological, chemical and antipersonnel weapons. Some groups and movements have pushed for complete elimination of weapons and armies. Peace movement campaigns have had some obvious successes, such as the banning of above-ground tests of nuclear weapons, and also have created a climate of opinion that has sometimes held back aggressive governments. However, peace movement campaigns have seldom dealt directly with the complex of scientific and technological operations serving military ends.

One exception to this is the movement for “peace conversion” or “economic conversion.”⁷ What this means is converting science, technology and industry from military purposes to civilian purposes, especially to activities that serve human needs. This might mean converting a gun factory to a home appliance factory or shifting from research into missile ballistics to research into public transport. Historically, this sort of conversion was routine at the ends of major wars. But as military technology becomes ever more specialised, conversion to civilian purposes becomes more difficult. Converting production from military trucks to civilian trucks is not so difficult; converting production from nuclear submarines to a useful civilian technology is quite a challenge. The technological dimension to peace conversion is actually the smaller hurdle. The major obstacle is the political and economic interests in continuing military production. These interests have become entrenched since World War II, so that governments administer what can be called a “permanent war economy.”

Peace conversion is a vital part of any process of changing science and technology so that they no longer serve to sustain war and repression. But peace conversion can be only one part of this process, since it provides no alternative means of directly providing the security that is the stated rationale for, if seldom the consequence of, military forces. (The deeper driving forces behind military systems are discussed in chapter 2.)

One alternative to the military is nonviolent defence. The military option involves professional soldiers using specially designed instruments of violence to defend and attack. Nonviolent defence involves all concerned people using methods of nonviolent action such as rallies, refusals to obey, strikes, boycotts, sit-ins and setting up alternative institutions. As a full alternative to military forces, nonviolent defence is also called social defence, civilian defence, civilian-based defence and defence by civil resistance. From a nonviolence viewpoint, only some functions of the military—notably defending the core values of a society against attack—need to have a nonviolent replacement. A nonviolent defence system would not take up other functions of militaries, such as internal repression and threatening other societies.

Methods of nonviolent action can also be used in campaigns against oppression, such as the independence movement in India led

by Mohandas Gandhi and the US civil rights movement led by Martin Luther King, Jr. There are numerous other examples, some of which are described later.

For those who are accustomed to thinking about weapons systems or to hearing about horrific wars and massacres around the world, nonviolent action at first glance may seem woefully inadequate. Actually, though, it can be an incredibly powerful technique. The key to nonviolent action is promoting refusal to consent. Even the most powerful weapons system requires human decisions to build, maintain and operate it. If manufacturers, commanders or operators refuse to cooperate, weapons will not be created or used. There are many examples where this process has occurred.

Most studies of nonviolent action have focussed on social and psychological factors, such as how to mobilise support. This is appropriate, since social and psychological factors are the keys to successful nonviolent struggle. Nevertheless, there is a role for technology appropriate for nonviolent defence. That is the theme of this book.

Consider the vast resources, both human and material, that have been devoted to military purposes for many decades. This includes development of weapons systems, training of large armies, military exercises, military industries, and orientation of social institutions to military ends. By comparison, only a tiny effort has been made to improve methods of nonviolent struggle. Is it any wonder that nonviolent defence is not a well-developed alternative? Its occasional successes are all the more remarkable, considering that they are analogous to the success of an army that had no weapons production, no training, no money and no planning. The implication of this comparison is that nonviolent defence should not be dismissed until it has been investigated, supported and tested on a scale similar to military defence.

In the next chapter, the connections between technology and the military are analysed. Chapter 3 gives a brief introduction to the dynamics of nonviolent action. Chapter 4 introduces the main subject: how technology might be used to support nonviolent struggle.

Nonviolent struggle potentially can involve nearly any area one can imagine, from sculpture to soccer. Since technology is increasingly pervasive, this means that design and choice of technology for nonviolent struggle also potentially affects nearly any conceivable

area. In many areas, it seems, no one has even begun to think through the implications. Chapters 5 to 8 give special attention to the key areas of communication, survival, the built environment and countering attack. Other areas that might be examined include art, sport, policing, prisons, money and jobs.⁸ Chapter 9 discusses the implications of nonviolent action for methods of doing research. Chapter 10 addresses the issue of “policy”: how to move from present-day militarised technology to a technology useful for nonviolent struggle.

The approach I take is to start with nonviolent struggle and see what implications it has for technology. Of course this is not the only way to approach these issues. Another is to start with a vision of a desired society—for example, based on participation, self-reliance, equity and ecological sustainability, as well as nonviolence—and then see what technology is most appropriate to create and sustain it.⁹ But in practice these two approaches are not greatly divergent, since in most cases the sort of technology suitable for nonviolent struggle is also suitable for fostering participation, self-reliance and so forth, though in a few particular areas there may be incompatibilities. I find it useful for the purpose of clarity to focus on technology for nonviolent struggle, while noting at various points the potential role of the same technology for promoting other values.

Notes

1. See, for example, Frank Barnaby, *The Automated Battlefield* (New York: Free Press, 1986); Martin van Creveld, *Technology and War: From 2000 B.C. to the Present* (New York: Free Press, 1989); James F. Dunnigan, *How to Make War: A Comprehensive Guide to Modern Warfare* (New York: Quill, 1983); James F. Dunnigan, *Digital Soldiers: The Evolution of High-Tech Weaponry and Tomorrow's Brave New Battlefield* (New York: St. Martin's Press, 1996); Kenneth Macksey, *Technology in War* (New York: Prentice Hall, 1986); William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since A.D.1000* (Oxford: Blackwell, 1983). On the continuing danger of nuclear war, see William E. Burrows and Robert Windrem, *Critical Mass: The Dangerous Race for Superweapons in a Fragmenting World* (New York: Simon and Schuster, 1994).

2. Eric Prokosch, *The Technology of Killing: A Military and Political History of Antipersonnel Weapons* (London: Zed Books, 1995).

3. Arne Naess, "Why not science for anarchists too? A reply to Feyerabend," *Inquiry*, Vol. 18, 1975, pp. 183-194, at p. 192.

4. Saul Mendlovitz and Rajni Kothari, "The perversion of science and technology: an indictment," *Bulletin of the Atomic Scientists*, Vol. 35, No. 1, January 1979, pp. 57-59, at p. 57.

5. Even if armed liberation is possible, it may not be a promising road to a better society, since it involves killing, secrecy, centralisation of power and male domination. The armed liberators often become the new oppressors.

6. Johan Galtung, "Why do disarmament negotiations fail?" *Gandhi Marg*, nos. 38-39, May-June 1982, pp. 298-307; Johan Galtung, *There Are Alternatives! Four Roads to Peace and Security* (Nottingham: Spokesman, 1984), pp. 131-138; Alva Myrdal, *The Game of Disarmament: How the United States and Russia Run the Arms Race* (New York: Pantheon, 1976). Among other factors, disarmament negotiations keep control over the agenda in the hands of the dominant governments and dampen public concern by giving the illusion that something is being done about the problem.

7. See, for example, Bonn International Center for Conversion, *Conversion Survey 1996: Global Disarmament, Demilitarization and Demobilization* (Oxford: Oxford University Press, 1996); Seymour Melman, *The Demilitarized Society: Disarmament and Conversion* (Montreal: Harvest House, 1988); Judith Reppy (ed.), *Conversion of Military R&D* (Basingstoke: Macmillan, 1998); Peter Southwood, *Disarming Military Industries: Turning an Outbreak of Peace into an Enduring Legacy* (Houndmills, Basingstoke: Macmillan, 1991); and the journal *Positive Alternatives*, published by the Center for Economic Conversion, 222 View Street, Mountain View CA 94041-1344, USA.

8. On the topics of policing, prisons and economics from the perspective of social defence, see Brian Martin, *Social Defence, Social Change* (London: Freedom Press, 1993).

9. I thank Andreas Speck for emphasising this point. A theoretical foundation for this approach is given by Nicholas Maxwell, who argues that most scientific and scholarly work is based on the "philosophy of knowledge," which assumes that knowledge is of value in itself. Maxwell argues that the philosophy of knowledge should be replaced by a "philosophy of wisdom," in which science is directly geared to solve major problems facing humanity, such as poverty, repression and war: Nicholas Maxwell, *From Knowledge to Wisdom: A Revolution in the Aims and Methods of Science* (Oxford: Basil Blackwell, 1984); Nicholas Maxwell, "What kind of inquiry can best help us create a good world?," *Science, Technology, & Human Values*, Vol. 17, 1992, pp. 205-227.