Science, Ethics, and Weapons Research

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INTRODUCTION

If it were not for *weapons research*, there would be no predator drones or smart bombs or improvised explosive devices or assault rifles. The insurgents in the Middle East and elsewhere would have no means to fight, and there would be no wars, large or small. Even more importantly, there would be no vast arsenals of thermonuclear weapons capable of ending much of the sentient life on the planet. The world would then most certainly be a safer place. But weapons research is not something new: the gunpowder weaponry of the early modern period was the product of research, as were the torsion catapults in Greece at the time of Philip and Alexander of Macedon. Whatever else is true about weapons research, it is clear that it introduces new (or improved) means of killing and destruction, and this is sufficient to define the activity.[1] This would appear to be a very weighty matter, something that one might imagine philosophers, and others who think about such things, would have had a lot to say; surprisingly, not much at all has been written on the subject, though some explanation of this neglect will be given in this chapter.

The main issue for *ethics* and weapons research centres on the ethical or moral evaluation of the activity: Is it *ever* morally justified to design the means to kill, harm and destroy, and if so, under precisely what circumstances? Turning to science and its relation to weapons research, the question here is the *role* that science plays in weapons research. Perhaps weapons research is a wholly (applied) scientific endeavour or perhaps science is a part of weapons research? Bringing ethics back in, if weapons research is deemed morally wrong, then is it the case that *whatever* role science plays is also wrong? To answer these questions, three examples will be given which will help to clarify the roles that science can play in weapons research. If weapons research itself is understood as applied science, as it is by Arrigo for instance (Arrigo 2000: 303), then one might expect this to entail the application of theory to the design for new weapons, for true or radical innovation. But there are other ways in which science can inform weapons research, as will be seen presently. Before moving on to these examples, it is worth making some general, and very brief, comments about ethics and the way it can apply to an intellectual activity such as science. This is worth doing because it cannot be assumed that the audience for the present topic is familiar with philosophy or ethics, but it is necessary to have a framework.[2]

BACKGROUND

A straightforward way to describe ethics is to say that it is a study which deals with what persons ought and ought not to do. It is thus to do with the choices, actions and behaviour of mature competent people. Some of the things that people do do not affect others, other humans, other sentient beings, in any significant way and hence these do not come under the purview of ethics. Those actions that do affect others are, however, open to moral or ethical evaluation: are they right or are they wrong? To resolve that question, one needs to appeal to a moral system. All such systems forbid certain actions, namely those that inflict unjustified harm on others. This is surely intuitive and obvious: *no one* wants to be harmed. It is almost

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by definition that no sentient being wants to feel pain - assuming that the pain does not indicate that some medical treatment is working or some such – and to be in pain is one form of being harmed.

Some moral systems require people not only to refrain from harming others but also to provide some positive benefit for them. Jeremy Bentham and John Stuart Mill, the nineteenth century English philosophers, famously believed that one ought to strive to increase the amount of happiness in the world. However, morality is supposed to be *impartial* in the sense that it forbids discrimination in regard to moral action. Prohibitions on harming do not end with family or friends or community or country: *nobody* should be harmed, no one at all. Some critics of the style of morality advocated by Bentham and Mill have pointed out that it is impossible to increase the amount of happiness in the world impartially: no one can make everyone happy! Just how serious this objection is is a matter of ongoing debate. But it is only necessary here to note that this kind of moral system shares the prohibition on harming with the former kind: for the topic at hand, it is clear that the moral evaluation of weapons research, whatever else it might involve, will not be such as to see it as an activity which aims to increase the amount of happiness in the world.

Most philosophers do not believe that the dictates of morality are absolute and cannot be broken in any circumstances. For example, most accept that a moral rule such as "Do not cause pain" has justified exceptions. Clearly, a dentist who inflicts pain on her patient to save his teeth has not done something morally wrong – provided that the patient understands and assents to the treatment. Also, it is generally agreed that it is permissible to cause pain in self-defence, if that is the only way to defend oneself. This leads to the view that *justifiable* exceptions to the overall moral prohibition against harming will be such as to show that the harm inflicted will prevent other harms. Just how this is worked out will vary from case to case, and it is here that much of the hard work in ethical reflection and evaluation takes place. One might think as a basic principle that the harms prevented should be at least as much or many or as great as the harms caused if there is to be justification, and that therefore it must be necessary to be able to make some informed assessment of what these might be. This brings the discussion back to weapons research, an activity that aims to provide the *means* to harm. It is now necessary to look at some examples.

1. It is well-known that both kinds of nuclear weapon, fission and fusion weapons, were the *direct results* of the application of scientific theory to design. Without advances in nuclear physics in the 1930s and 1940s, the very idea of a nuclear weapon would not have been dreamed up. Rhodes gives an excellent account of the genesis of the idea of a fission weapon, from the speculations of Szilard from 1933 to his work with Fermi in the US, and the 'memorandum' written by the émigré scientists Frisch and Peierls in England which made predictions about crucial nuclear parameters. The designs of the two kinds of fission bombs made during the Second World War were determined by the properties of the fissile materials used, matters that were uncovered by painstaking research.[3] The idea for a thermonuclear weapon emerged from the atomic bomb project, and was also driven by science and by scientists. Indeed, the fusion reactions that power these weapons must be initiated by 'fission triggers', so not only did the research into fission or atomic bombs lead to thermonuclear weapons, the products of the former were integral elements of the latter.[4]

The research leading to nuclear weapons was exceptional in that scientists, including all of those mentioned above, took the initiative in agitating for programmes to investigate the possibility of using the recently discovered fissile materials for a weapon of terrible destruction, to the subsequent regret of some of them. The military is now well-aware of the power of science and has set up agencies to oversee the application of scientific