The Terrifying Potential of Future Weapons

Stuart Russell, professor of computer science at the University of California, has warned that military drone technology is evolving very fast, and may have catastrophic consequences for the human race. Writing in *Nature*, he has described lethal autonomous weapons systems (or LAWS) as the third revolution in warfare, after gunpowder and nuclear arms. He has suggested that scientists and engineers working in the fields of artificial intelligence and robotics have an obligation to consider the ethics of what they may be working towards, in the same way that physicists and chemists have taken a moral stance on nuclear and chemical weapons.

When I wrote about [Obama's drone programme](#) last month, I explored the lack of accountability in the use of such weapons, the human damage they are causing, and the speed at which the technology is developing. In particular, I asked why the "fog of war" is still being presented as a reason for civilians being blown to pieces, in places that are not war zones - such as rural areas of Somalia and Pakistan.

(And then of course I remembered: the "War on Terror" means anywhere the US and its allies fires its guns is a war zone.)

Are we to believe that investing more taxpayers' pounds, dollars and Israeli shekels in the research and development of ever more sophisticated weapons systems is finally going to succeed in dissipating this mist that makes it impossible to determine friend from foe? It is tempting to think that if this were the case, we would have seen some evidence of it by now. Even in 1998, when the US wiped out the Al-Shifa pharmaceutical plant in Sudan (discussed at some length by [Noam Chomsky and Sam Harris](#)), a journalist on the scene three years later described the chilling accuracy required to deliver fourteen cruise missiles into that tiny area, obliterating the building and leaving others nearby standing (just about), from a distance of several hundred miles. Clearly, precision is not a problem. It is what the weapons are *aimed at* that should be a source of concern.

Who decides? At the moment, it is human beings, operating the machines remotely. In the near future it may be computer algorithms programmed by human beings to operate the machines. Thus, the gulf between the killers and those who are killed yawns wider. It will always be killers operating from the richest, most powerful nations who are most effectively insulated from the gruesome results of their actions, and it will increasingly be the citizens of poor countries who find themselves on the receiving end. We can see the results of this already, of course. In the case of the bombing of the Al-Shifa pharmaceutical plant, Noam Chomsky has posited that the Clinton administration viewed the ordinary Sudanese people [like ants](#), i.e. to be disregarded entirely, and stepped on. What humanity really does not need, in this context, is a new method of killing that removes it further into the realm of abstraction.

There is an argument I have heard before - particularly when discussing these issues - which has an air of fatalism about it. While we can agree that the technology, used for these purposes, is hardly likely to make the world a better place, some will suggest there is little to be done to prevent it arriving in the future. Autonomous killing machines may well just be another step on the evolutionary path that has progressed remorselessly from stabbing and clubbing weapons, to kinetic projectiles, to chemical explosives, to nuclear bombs. If these latest monstrosities are not developed in the United States (as an example), then they will be developed in Russia, or China, and then the US will find itself at a strategic disadvantage.

This argument neglects the international agreements that are made when the world is faced by the threat of particularly devastating weapons. The test ban treaties and non-proliferation agreements of the 1960s marked the beginning of the end of the nuclear arms race between the US and the Soviet Union, and while it would be many more years before the tensions of the Cold War simmered down, these diplomatic success stories are proof that mutually beneficial deals can be struck when the stakes are considered to be high enough. Russell mentions the Mine Ban Treaty signed in Ottawa in 1997 as an example of a multilateral, binding policy agreement brought about by growing public disgust at the use of land mines. In the case of lethal autonomous weapons, the first step is for the public to become aware of their existence and potential, so that pressure can be brought to bear on governments in this area as well. The Campaign to Stop Killer Robots, now well established, and comprised of NGOs including Human Rights Watch and Article 36, is working hard to raise that awareness, and to push it higher up the agenda at international conferences, such as the Convention on Conventional Weapons held in Geneva last month.

As an example of a lethal autonomous weapons system now in existence, Russell mentions the Samsung SGR-A1, which is a stationary robot, equipped with a machine gun and a grenade launcher, deployed in the demilitarized zone between North and South Korea. In fully autonomous mode, it is capable of detecting movement up to two miles away, and using lethal force to ensure whatever moved never moves again.

Much as I considered the horror of being targeted by a remotely operated drone in a previous post, somehow the idea of being obliterated by a fully autonomous robot strikes me as being even more dreadful, despite the result being the same. Never mind the fact that the victim would probably never even see or hear the stone cold assassin fixing him or her in its sights. Just the *idea* that death would be possible via the agency of something robotic, performing a function just like any other machine, with every other living soul being entirely indifferent to you at the moment of your execution, is a vision too chilling to contemplate in any depth. In a world where such technology has proliferated, and fallen into the hands of every well-funded tyrant and terrorist group, we would all be reduced to the status of ants, to be swept aside and crushed.

In his article, Russell describes a plausible and utterly bleak future in which killer robots have been reduced in size to the point at which they are impossible to defend against, able to infiltrate any human-scale dwelling, "... perhaps [carrying] a one-gram shaped charge to puncture the human cranium." He uses the Assad regime's military crackdown in Homs as an example of brutality that would be rendered infinitely more deadly and efficient had it had access to such technology. There is no doubt whatsoever that if such technology should ever become available, there would be no shortage of customers.

We must ensure that it never becomes available. Having scraped through the twentieth century without annihilating ourselves in a nuclear holocaust, we must apply the lessons learned to the more powerful technologies that now threaten us in the twenty-first. This time around, we cannot afford to wait for the arms manufacturers to develop their apocalyptic future weapons, because by then it will be too late. The exponential pace of change in areas such as robotics and artificial intelligence means we must apply universal safeguards and controls *before* the research and development reaches fruition, otherwise the changes to our existence will be irrevocable. The power to do so is in our hands, and we must use it while we still have it.

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