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Technology and Evil

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Humans cause immense damage to each other and to the environment. Steven James Bartlett argues that humans have an inbuilt pathology that leads to violence and ecosystem destruction that can be called evil, in a clinical rather than a religious sense. Given that technologies are human constructions, it follows that technologies can embody the same pathologies as humans. An important implication of Bartlett's ideas is that studies of technology should be normative in opposing destructive technologies.

Introduction

Humans, individually and collectively, do a lot of terrible things to each other and to the environment. Some obvious examples are murder, torture, war, genocide and massive environmental destruction. From the perspective of an ecologist from another solar system, humans are the world's major pestilence, spreading everywhere, enslaving and experimenting on a few species for their own ends, causing extinctions of numerous other species and destroying the environment that supports them all.

These thoughts suggest that humans, as a species, have been causing some serious problems. Of course there are many individuals and groups trying to make the world a better place, for example campaigning against war and environmental degradation, and fostering harmony and sustainability. But is it possible that by focusing on what needs to be done and on the positives in human nature, the seriousness of the dark side of human behaviour is being neglected?

Here, I address these issues by looking at studies of human evil, with a focus on a book by Steven Bartlett. With this foundation, it is possible to look at technology with a new awareness of its deep problems. This will not provide easy solutions but may give a better appreciation of the task ahead.

Background

For decades, I have been studying war, ways to challenge war, and alternatives to military systems (e.g. Martin, 1984). My special interest has been in nonviolent action as a means for addressing social problems. Along the way, this led me to read about genocide and other forms of violence. Some writing in the area refers to evil, addressed from a secular, scientific and non-moralistic perspective.

Roy Baumeister (1997), a prominent psychologist, wrote a book titled *Evil: Inside Human Violence and Cruelty,* that I found highly insightful. Studying the psychology of perpetrators, ranging from murderers and terrorists to killers in genocide, Baumeister concluded that most commonly they feel justified in their actions and see themselves as victims. Often they think what they've done is not that important. Baumeister's sophisticated analysis aims to counter the popular perception of evil-doers as malevolent or uncaring.

Baumeister is one of a number of psychologists willing to talk about good and evil. If the word evil feels uncomfortable, then substitute "violence and cruelty," as in the subtitle of Baumeister's book, and the meaning is much the same. It's also possible to approach evil from the viewpoint of brain function, as in Simon Baron-Cohen's (2011) *The Science of Evil: On Empathy and the Origins of Cruelty*. There are also studies that combine psychiatric and religious perspectives, such as M. Scott Peck's (1988) *People of the Lie: The Hope for Healing Human Evil*.

Another part of my background is technology studies, including being involved in the nuclear power debate, studying technological vulnerability, communication technology, and technology and euthanasia, among other topics. I married my interests in nonviolence and in technology by studying how technology could be designed and used for nonviolent struggle (Martin, 2001).

It was with this background that I encountered Steven James Bartlett's (2005) massive book *The Pathology of Man: A Study of Human Evil*. Many of the issues it addresses, for example genocide and war, were familiar to me, but his perspective offered new and disturbing insights. *The Pathology of Man* is more in-depth and far-reaching than other studies I had encountered, and is worth bringing to wider attention.

Here, I offer an abbreviated account of Bartlett's analysis of human evil. Then I spell out ways of applying his ideas to technology and conclude with some possible implications.

Bartlett on Evil

Steven James Bartlett is a philosopher and psychologist who for decades studied problems in human thinking. *The Pathology of Man* was published in 2005 but received little attention. This may partly be due to the challenge of reading an erudite 200,000-word treatise but also partly due to people being resistant to Bartlett's message, for the very reasons expounded in his book.

In reviewing the history of disease theories, Bartlett points out that in previous eras a wide range of conditions were considered to be diseases, ranging from "Negro consumption" to anti-Semitism. This observation is part of his assessment of various conceptions of disease, relying on standard views about what counts as disease, while emphasising that judgements made are always relative to a framework that is value-laden.

This is a sample portion of Bartlett's carefully laid out chain of logic and evidence for making a case that the human species is pathological, namely characteristic of a disease. In making this case, he is not speaking metaphorically but clinically. The fact that the human species has seldom been seen as pathological is due to humans adopting a framework that exempts themselves from this diagnosis, which would be embarrassing to accept, at least for those inclined to think of humans as the apotheosis of evolution.

Next stop: the concept of evil. Bartlett examines a wide range of perspectives, noting that most of them are religious in origin. In contrast, he prefers a more scientific view: "Human

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evil, in the restricted and specific sense in which I will use it, refers to apparently voluntary destructive behavior and attitudes that result in the general negation of health, happiness, and ultimately of life." (p. 65) In referring to "general negation," Bartlett is not thinking of a poor diet or personal nastiness but of bigger matters such as war, genocide and overpopulation.

Bartlett is especially interested in the psychology of evil, and canvasses the ideas of classic thinkers who have addressed this issue, including Sigmund Freud, Carl Jung, Karl Menninger, Erich Fromm and Scott Peck. This detailed survey has only a limited return: these leading thinkers have little to say about the origins of evil and what psychological needs it may serve.

So Bartlett turns to other angles, including Lewis Fry Richardson's classic work quantifying evidence of human violence, and research on aggression by ethologists, notably Konrad Lorenz. Some insights come from this examination, including Richardson's goal of examining human destructiveness without emotionality and Lorenz's point that humans, unlike most other animals, have no inbuilt barriers to killing members of their own species.

Bartlett on the Psychology of Genocide

To stare the potential for human evil in the face, Bartlett undertakes a thorough assessment of evidence about genocide, seeking to find the psychological underpinning of systematic mass killings of other humans. He notes one important factor, a factor not widely discussed or even admitted: many humans gain pleasure from killing others. Two other relevant psychological processes are projection and splitting. Projection involves denying negative elements of oneself and attributing them to others, for example seeing others as dangerous, thereby providing a reason for attacking them: one's own aggression is attributed to others.

Splitting involves dividing one's own grandiose self-conception from the way others are thought of. "By belonging to the herd, the individual gains an inflated sense of power, emotional support, and connection. With the feeling of group-exaggerated power and puffed up personal importance comes a new awareness of one's own identity, which is projected into the individual's conception" of the individual's favoured group (p. 157). As a member of a group, there are several factors that enable genocide: stereotyping, dehumanisation, euphemistic language and psychic numbing.

To provide a more vivid picture of the capacity for human evil, Bartlett examines the Holocaust, noting that it was not the only or most deadly genocide but one, partly due to extensive documentation, that provides plenty of evidence of the psychology of mass killing.

Anti-Semitism was not the preserve of the Nazis, but existed for centuries in numerous parts of the world, and indeed continues today. The long history of persistent anti-Semitism is, according to Bartlett, evidence that humans need to feel prejudice and to persecute others. But at this point there is an uncomfortable finding: most people who are anti-Semitic are

psychologically normal, suggesting the possibility that what is normal can be pathological. This key point recurs in Bartlett's forensic examination.

> Prejudice and persecution do not usually bring sadness and remorse to the victimizers, but rather a sense of strengthened identity, pleasure, self-satisfaction, superiority, and power. Prejudice and persecution are Siamese twins: Together they generate a heightened and invigorated belief in the victimizers' supremacy. The fact that prejudice and persecution benefit bigots and persecutors is often overlooked or denied. (p. 167)

Bartlett examines evidence about the psychology of several groups involved in the Holocaust: Nazi leaders, Nazi doctors, bystanders, refusers and resisters. Nazi leaders and doctors were, for the most part, normal and well-adjusted men (nearly all were men). Most of the leaders were above average intelligence, and some had very high IQs, and many of them were well educated and culturally sophisticated. Cognitively they were superior, but their moral intelligence was low.

Bystanders tend to do nothing due to conformity, lack of empathy and low moral sensibility. Most Germans were bystanders to Nazi atrocities, not participating but doing nothing to oppose them.

Next are refusers, those who declined to be involved in atrocities. Contrary to usual assumptions, in Nazi Germany there were few penalties for refusing to join killings; it was just a matter of asking for a different assignment. Despite this, of those men called up to join killing brigades, very few took advantage of this option. Refusers had to take some initiative, to think for themselves and resist the need to conform.

Finally, there were resisters, those who actively opposed the genocide, but even here Bartlett raises a concern, saying that in many cases resisters were driven more by anger at offenders than empathy with victims. In any case, in terms of psychology, resisters were the odd ones out, being disengaged with the dominant ideas and values in their society and being able to be emotionally alone, without peer group support. Bartlett's concern here meshes with research on why people join contemporary social movements: most first become involved via personal connections with current members, not because of moral outrage about the issue (Jasper, 1997).

The implication of Bartlett's analysis of the Holocaust is that there is something wrong with humans who are psychologically normal (see also Bartlett, 2011, 2013). When those who actively resist genocide are unusual psychologically, this points to problems with the way most humans think and feel.

Another one of Bartlett's conclusions is that most solutions that have been proposed to the problem of genocide — such as moral education, cultivating acceptance and respect, and reducing psychological projection — are vague, simplistic and impractical. They do not measure up to the challenge posed by the observed psychology of genocide.

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Bartlett's assessment of the Holocaust did not surprise me because, for one of my studies of tactics against injustice (Martin, 2007), I read a dozen books and many articles about the 1994 Rwandan genocide, in which between half a million and a million people were killed in the space of a few months. The physical differences between the Tutsi and Hutu are slight; the Hutu killers targeted both Tutsi and "moderate" Hutu. It is not widely known that Rwanda is the most Christian country in Africa, yet many of the killings occurred in churches where Tutsi had gone for protection. In many cases, people killed neighbours they had lived next to for years, or even family members. The Rwandan genocide had always sounded horrific; reading detailed accounts to obtain examples for my article, I discovered it was far worse than I had imagined (Martin, 2009).

After investigating evidence about genocide and its implications about human psychology, Bartlett turns to terrorism. Many of his assessments accord with critical terrorism studies, for example that there is no standard definition of terrorism, the fear of terrorism is disproportionate to the threat, and terrorism is "framework-relative" in the sense that calling someone a terrorist puts you in opposition to them.

Bartlett's interest is in the psychology of terrorists. He is sceptical of the widespread assumption that there must be something wrong with them psychologically, and cites evidence that terrorists are psychologically normal. Interestingly, he notes that there are no studies comparing the psychologies of terrorists and soldiers, two groups that each use violence to serve a cause. He also notes a striking absence: in counterterrorism writing, no one has studied the sorts of people who refuse to be involved in cruelty and violence and who are resistant to appeals to in-group prejudice, which is usually called loyalty or patriotism. By assuming there is something wrong with terrorists, counterterrorism specialists are missing the possibility of learning how to deal with the problem.

Bartlett on War Psychology

Relatively few people are involved in genocide or terrorism except by learning about them via media stories. It is another matter when it comes to war, because many people have lived through a time when their country has been at war. In this century, just think of Afghanistan, Iraq and Syria, where numerous governments have sent troops or provided military assistance.

Bartlett says there is plenty of evidence that war evokes powerful emotions among both soldiers and civilians. For some, it is the time of life when they feel most alive, whereas peacetime can seem boring and meaningless. Although killing other humans is proscribed by most moral systems, war is treated as an exception. There are psychological preconditions for organised killing, including manufacturing differences, dehumanising the enemy, nationalism, group identity and various forms of projection. Bartlett says it is also important to look at psychological factors that prevent people from trying to end wars.

Even though relatively few people are involved in war as combat troops or even as part of the systems that support war-fighting, an even smaller number devote serious effort to trying

to end wars. Governments collectively spend hundreds of billions of dollars on their militaries but only a minuscule amount on furthering the causes of peace. This applies as well to research: there is a vastly more military-sponsored or military-inspired research than peace-related research. Bartlett concludes that, "war is a pathology which the great majority of human beings do not *want* to cure" (p. 211).

Thinking back over the major wars in the past century, in most countries it has been far easier to support war than to oppose it. Enlisting in the military is seen as patriotic whereas refusing military service, or deserting the army, is seen as treasonous. For civilians, defeating the enemy is seen as a cause for rejoicing, whereas advocating an end to war — except via victory — is a minority position.

There have been thousands of war movies: people flock to see killing on the screen, and the bad guys nearly always lose, especially in Hollywood. In contrast, the number of major films about nonviolent struggles is tiny — what else besides the 1982 film *Gandhi*? — and seldom do they attract a wide audience. Bartlett sums up the implications of war for human psychology:

> By legitimating the moral atrocity of mass murder, war, clothed as it is in the psychologically attractive trappings of patriotism, heroism, and the ultimately good cause, is one of the main components of human evil. War, because it causes incalculable harm, because it gives men and women justification to kill and injure one another without remorse, because it suspends conscience and neutralizes compassion, because it takes the form of psychological epidemics in which dehumanization, cruelty, and hatred are given unrestrained freedom, and because it is a source of profound human gratification and meaning—because of these things, war is not only a pathology, but is one of the most evident expressions of human evil. (p. 225)

The Obedient Parasite

Bartlett next turns to obedience studies, discussing the famous research by Stanley Milgram (1974). However, he notes that such studies shouldn't even be needed: the evidence of human behaviour during war and genocide should be enough to show that most human are obedient to authority, even when the authority is instructing them to harm others.

Another relevant emotion is hatred. Although hating is a widespread phenomenon — most recently evident in the phenomenon of online harassment (Citron, 2014) — Bartlett notes that psychologists and psychiatrists have given this emotion little attention. Hatred serves several functions, including providing a cause, overcoming the fear of death, and, in groups, helping build a sense of community.

Many people recognise that humans are destroying the ecological web that supports their own lives and those of numerous other species. Bartlett goes one step further, exploring the field of parasitology. Examining definitions and features of parasites, he concludes that,

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according to a broad definition, humans are parasites on the environment and other species, and are destroying the host at a record rate. He sees human parasitism as being reflected in social belief systems including the "cult of motherhood," infatuation with children, and the belief that other species exist to serve humans, a longstanding attitude enshrined in some religions.

Reading *The Pathology of Man,* I was tempted to counter Bartlett's arguments by pointing to the good things that so many humans have done and are doing, such as everyday politeness, altruism, caring for the disadvantaged, and the animal liberation movement. Bartlett could counter by noting it would be unwise to pay no attention to disease symptoms just because your body has many healthy parts. If there is a pathology inherent in the human species, it should not be ignored, but instead addressed face to face.

Technologies of Political Control

Bartlett's analysis of human evil, including that violence and cruelty are perpetrated mostly by people who are psychologically normal and that many humans obtain pleasure out of violence against other humans, can be applied to technology. The aim in doing this is not to demonise particular types or uses of technology but to explore technological systems from a different angle in the hope of providing insights that are less salient from other perspectives.

Consider "technologies of political control," most commonly used by governments against their own people (Ackroyd et al., 1974; Wright, 1998). These technologies include tools of torture and execution including electroshock batons, thumb cuffs, restraint chairs, leg shackles, stun grenades and gallows. They include technologies used against crowds such as convulsants and infrasound weapons (Omega Foundation, 2000). They include specially designed surveillance equipment.

In this discussion, "technology" refers not just to artefacts but also to the social arrangements surrounding these artefacts, including design, manufacture, and contexts of use. To refer to "technologies of political control" is to invoke this wider context: an artefact on its own may seem innocuous but still be implicated in systems of repression. Repression here refers to force used against humans for the purposes of harm, punishment or social control.

Torture has a long history. It must be considered a prime example of human evil. Few species intentionally inflict pain and suffering on other members of their own species. Among humans, torture is now officially renounced by every government in the world, but it still takes place in many countries, for example in China, Egypt and Afghanistan, as documented by Amnesty International. Torture also takes place in many conventional prisons, for example via solitary confinement.

To support torture and repression, there is an associated industry. Scientists design new ways to inflict pain and suffering, using drugs, loud noises, disorienting lights, sensory deprivation and other means. The tools for delivering these methods are constructed in factories and the

products marketed around the world, especially to buyers seeking means to control and harm others. Periodically, "security fairs" are held in which companies selling repression technologies tout their products to potential buyers.

The technology of repression does not have a high profile, but it is a significant industry, involving tens of billions of dollars in annual sales. It is a prime cause of human suffering. So what are people doing about it?

Those directly involved seem to have few moral objections. Scientists use their skills to design more sophisticated ways of interrogating, incarcerating and torturing people. Engineers design the manufacturing processes and numerous workers maintain production. Sales agents tout the technologies to purchasers. Governments facilitate this operation, making extraordinary efforts to get around attempts to control the repression trade. So here is an entire industry built around technologies that serve to control and harm defenceless humans, and it seems to be no problem to find people who are willing to participate and indeed to tenaciously defend the continuation of the industry.

In this, most of the world's population are bystanders. Mass media pay little attention. Indeed, there are fictional dramas that legitimise torture and, more generally, the use of violence against the bad guys. Most people remain ignorant of the trade in repression technologies. For those who learn about it, few make any attempt to do something about it, for example by joining a campaign.

Finally there are a few resisters. There are groups like the Omega Research Foundation that collect information about the repression trade and organisations like Amnesty International and Campaign Against Arms Trade that campaign against it. Journalists have played an important role in exposing the trade (Gregory, 1995).

The production, trade and use of technologies of repression, especially torture technologies, provide a prime example of how technologies can be implicated in human evil. They illustrate quite a few of the features noted by Bartlett. There is no evidence that the scientists, engineers, production workers, sales agents and politician allies of the industry are anything other than psychologically normal. Indeed, it is an industry organised much like any other, except devoted to producing objects used to harm humans.

Nearly all of those involved in the industry are simply operating as cogs in a large enterprise. They have abdicated responsibility for causing harm, a reflection of humans' tendency to obey authorities. As for members of the public, the psychological process of projection provides a reassuring message: torture is only used as a last result against enemies such as terrorists. "We" are good and "they" are bad, so what is done to them is justified.

Weapons and Tobacco

Along with the technology of repression, weapons of war are prime candidates for being understood as implicated in evil. If war is an expression of the human potential for violence,

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then weapons are a part of that expression. Indeed, increasing the capacity of weapons to maim, kill and destroy has long been a prime aim of militaries. So-called conventional weapons include everything from bullets and bayonets to bombs and ballistic missiles, and then there are biological, chemical and nuclear weapons.

Studying weaponry is a way of learning about the willingness of humans to use their ingenuity to harm other humans. Dum-dum bullets were designed to tumble in flight so as to cause more horrendous injuries on exiting a body. Brightly coloured land mines can be attractive to young children. Some of these weapons have been banned, while others take their place. In any case, it is reasonable to ask, what was going through the minds of those who conceived, designed, manufactured, sold and deployed such weapons?

The answer is straightforward, yet disturbing. Along the chain, individuals may have thought they were serving their country's cause, helping defeat an enemy, or just doing their job and following orders. Indeed, it can be argued that scientific training and enculturation serve to develop scientists willing to work on assigned tasks without questioning their rationale (Schmidt, 2000).

Nuclear weapons, due to their capacity for mass destruction, have long been seen as especially bad, and there have been significant mass movements against these weapons (Wittner, 1993–2003). However, the opposition has not been all that successful, because there continue to be thousands of nuclear weapons in the arsenals of eight or so militaries, and most people seldom think about it. Nuclear weapons exemplify Bartlett's contention that most people do not do much to oppose war — even a war that would devastate the earth.

Consider something a bit different: cigarettes. Smoking brings pleasure, or at least relief from craving, to hundreds of millions of people daily, at the expense of a massive death toll (Proctor, 2011). By current projections, hundreds of millions of people will die this century from smoking-related diseases.

Today, tobacco companies are stigmatised and smoking is becoming unfashionable — but only in some countries. Globally, there are ever more smokers and ever more victims of smoking-related illnesses. Cigarettes are part of a technological system of design, production, distribution, sales and use. Though the cigarette itself is less complex than many military weapons, the same questions can be asked of everyone involved in the tobacco industry: how can they continue when the evidence of harm is so overwhelming? How could industry leaders spend decades covering up their own evidence of harm while seeking to discredit scientists and public health officials whose efforts threatened their profits?

The answers draw on the same psychological processes involved in the perpetuation of violence and cruelty in more obvious cases such as genocide, including projection and obedience. The ideology of the capitalist system plays a role too, with the legitimating myths of the beneficial effects of markets and the virtue of satisfying consumer demand.

For examining the role of technology in evil, weapons and cigarettes are easy targets for condemnation. A more challenging case is the wide variety of technologies that contribute to greenhouse gas emissions and hence to climate change, with potentially catastrophic effects for future generations and for the biosphere. The technologies involved include motor vehicles (at least those with internal combustion engines), steel and aluminum production, home heating and cooling, and the consumption of consumer goods. The energy system is implicated, at least the part of it predicated on carbon-based fuels, and there are other contributors as well such as fertilisers and clearing of forests.

Most of these technologies were not designed to cause harm, and those involved as producers and consumers may not have thought of their culpability for contributing to future damage to the environment and human life. Nevertheless, some individuals have greater roles and responsibilities. For example, many executives in fossil fuel companies and politicians with the power to reset energy priorities have done everything possible to restrain shifting to a sustainable energy economy.

Conceptualising the Technology of Evil

If technologies are implicated in evil, what is the best way to understand the connection? It could be said that an object designed and used for torture *embodies* evil. Embodiment seems appropriate if the primary purpose is for harm and the main use is for harm, but seldom is this sort of connection exclusive of other uses. A nuclear weapon, for example, might be used as an artwork, a museum exhibit, or a tool to thwart a giant asteroid hurtling towards earth.

Another option is to say that some technologies are "selectively useful" for harming others: they can potentially be useful for a variety of purposes but, for example, easier to use for torture than for brain surgery or keeping babies warm. To talk of selective usefulness instead of embodiment seems less essentialist, more open to multiple interpretations and uses.

Other terms are "abuse" and "misuse." Think of a cloth covering a person's face over which water is poured to give a simulation of drowning, used as a method of torture called waterboarding. It seems peculiar to say that the wet cloth embodies evil given that it is only the particular use that makes it a tool to cause harm to humans. "Abuse" and "misuse" have an ignominious history in the study of technology because they are often based on the assumption that technologies are inherently neutral. Nevertheless, these terms might be resurrected in speaking of the connection between technology and evil when referring to technologies that were not designed to cause harm and are seldom used for that purpose.

Consider next the role of technologies in contributing to climate change. For this, it is useful to note that most technologies have multiple uses and consequences. Oil production, for example, has various immediate environmental and health impacts. Oil, as a product, has multitudinous uses, such as heating houses, manufacturing plastics and fuelling military aircraft. The focus here is on a more general impact via the waste product carbon dioxide that contributes to global warming. In this role, it makes little sense to call oil evil in itself.

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Instead, it is simply one player in a vast network of human activities that collectively are spoiling the environment and endangering future life on earth. The facilitators of evil in this case are the social and economic systems that maintain dependence on greenhouse gas sources and the psychological processes that enable groups and individuals to resist a shift to sustainable energy systems or to remain indifferent to the issue.

For climate change, and sustainability issues more generally, technologies are implicated as part of entrenched social institutions, practices and beliefs that have the potential to radically alter or destroy the conditions for human and non-human life. One way to speak of technologies in this circumstance is as partners. Another is to refer to them as actors or actants, along the lines of actor-network theory (Latour, 1987), though this gives insufficient salience to the psychological dimensions involved.

Another approach is to refer to technologies as extensions of humans. Marshall McLuhan (1964) famously described media as "extensions of man." This description points to the way technologies expand human capabilities. Vehicles expand human capacities for movement, otherwise limited to walking and running. Information and communication technologies expand human senses of sight, hearing and speaking. Most relevantly here, weapons expand human capacities for violence, in particular killing and destruction. From this perspective, humans have developed technologies to extend a whole range of capacities, some of them immediately or indirectly harmful.

In social studies of technology, various frameworks have been used, including political economy, innovation, social shaping, cost-benefit analysis and actor-network theory. Each has advantages and disadvantages, but none of the commonly used frameworks emphasises moral evaluation or focuses on the way some technologies are designed or used for the purpose of harming humans and the environment.

Implications

The Pathology of Man is a deeply pessimistic and potentially disturbing book. Probing into the psychological foundations of violence and cruelty shows a side of human behaviour and thinking that is normally avoided. Most commentators prefer to look for signs of hope, and would finish a book such as this with suggestions for creating a better world. Bartlett, though, does not want to offer facile solutions.

Throughout the book, he notes that most people prefer not to examine the sources of human evil, and so he says that hope is actually part of the problem. By continually being hopeful and looking for happy endings, it becomes too easy to avoid looking at the diseased state of the human mind and the systems it has created.

Setting aside hope, nevertheless there are implications that can be derived from Bartlett's analysis. Here I offer three possible messages regarding technology.

Firstly, if it makes sense to talk about human evil in a non-metaphorical sense, and to trace the origins of evil to features of human psychology, then technologies, as human creations, are necessarily implicated in evil. The implication is that a normative analysis is imperative. If evil is seen as something to be avoided or opposed, then likewise those technologies most closely embodying evil are likewise to be avoided or opposed. This implies making judgements about technologies. In technologies studies, this already occurs to some extent. However, common frameworks, such as political economy, innovation and actor-network theory, do not highlight moral evaluation.

Medical researchers do not hesitate to openly oppose disease, and in fact the overcoming of disease is an implicit foundation of research. Technology studies could more openly condemn certain technologies.

Secondly, if technology is implicated in evil, and if one of the psychological processes perpetuating evil is a lack of recognition of it and concern about it, there is a case for undertaking research that provides insights and tools for challenging the technology of evil. This has not been a theme in technology studies. Activists against torture technologies and military weaponry would be hard pressed to find useful studies or frameworks in the scholarship about technology.

One approach to the technology of evil is action research (McIntyre 2008; Touraine 1981), which involves combining learning with efforts towards social change. For example, research on the torture technology trade could involve trying various techniques to expose the trade, seeing which ones are most fruitful. This would provide insights about torture technologies not available via conventional research techniques.

Thirdly, education could usefully incorporate learning about the moral evaluation of technologies. Bartlett argues that one of the factors facilitating evil is the low moral development of most people, as revealed in the widespread complicity in or complacency about war preparation and wars, and about numerous other damaging activities.

One approach to challenging evil is to increase people's moral capacities to recognise and act against evil. Technologies provide a convenient means to do this, because human-created objects abound in everyday life, so it can be an intriguing and informative exercise to figure out how a given object relates to killing, hatred, psychological projection and various other actions and ways of thinking involved in violence, cruelty and the destruction of the foundations of life.

No doubt there are many other ways to learn from the analysis of human evil. The most fundamental step is not to turn away but to face the possibility that there may be something deeply wrong with humans as a species, something that has made the species toxic to itself and other life forms. While it is valuable to focus on what is good about humans, to promote good it is also vital to fully grasp the size and depth of the dark side.

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