Clive Staples Lewis: Social, Environmental and Biomedical Implications of Technology

Jonas Hallström

Book Chapter

Cite this chapter as:


International Technology Education Studies, ISSN: 1879-8748, No. 16

Copyright: Brill Academic Publishers

The self-archived postprint version of this journal article is available at Linköping University Institutional Repository (DiVA):
http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-156522
JONAS HALLSTRÖM

CLIVE STAPLES LEWIS

Social, Environmental and Biomedical Implications of Technology, 180226

INTRODUCTION

What we call Man’s power over Nature turns out to be a power exercised by some men over other men with Nature as its instrument (Lewis, 1943/1978, p. 35).

The above quote appeared in 1943 in a short book entitled The Abolition of Man: Or Reflections on Education with Special Reference to the Teaching of English in the Upper Forms of Schools, by Oxford academic Clive Staples (C.S.) Lewis. It might seem that a book with such a title has little to do with the philosophy of technology or technology education, but The Abolition of Man has been part of the scientific discourse of both the history, sociology and philosophy of technology in the past decades. The introductory quote can be found in important historical works, surprisingly often without the original reference, in discussions about technology in relation to social class, the environment and ethics (e.g. Hård, 1993; Pacey, 1983). The third part of the book was also included in its entirety in an early anthology in the emerging field of philosophy of technology (Mitcham & Mackay, 1972/1983). Jennings (2010) claimed, with reference to The Abolition of Man, that “Lewis’ writings have inspired much of the work in contemporary bioethics that critically questions some aspects of biotechnology, particularly the prospect of human cloning” (p. 28; cf. Meilaender, 2014; Phillips, 2012). Lewis’ analysis of technology as a means of exercising power also predates the emergence of the field of Science and Technology Studies (STS), in which such analyses became ubiquitous (Tatum, 1995). Thus, although Lewis’ work has not (yet) achieved a prominent position in the official philosophy of technology canon, this book still left an important imprint on the field. The aim of this chapter is to outline some aspects of Lewis’ philosophy of technology in The Abolition of Man, and provide some suggestions for how it can be applied in technology education.

C.S. Lewis was born in 1898 in Belfast, Northern Ireland. He was educated at Oxford University and subsequently became tutor there in the mid 1920s. In 1954, Lewis became professor of medieval and renaissance English literature at Cambridge University, and stayed there until his death in 1963 (McGrath, 2013; Wilson, 1990). He is best known for his theological and religious writing, the Narnia children’s books, and a Wellsian and Second World War-inspired science-fiction trilogy – including Out of the Silent Planet, Perelandra and That Hideous Strength (cf. Schwartz, 2009). However, he also wrote other novels, poetry,
philosophy, autobiography, and literary criticism. Throughout Lewis’ writing, the relationship between science, technology and society is a recurring theme. For example, the ideas that philosopher of science Thomas S. Kuhn presented in *The Structure of Scientific Revolutions* (1962) were echoed in Lewis’ *The Discarded Image*, in which he expounds on something similar to Kuhn’s concept of paradigm shift of scientific models of the universe, as seen in medieval and renaissance literature (Kuhn, 1962; Lewis, 1964, pp. 216-223). So, even though *The Abolition of Man* is quite unique in elaborating on an explicit philosophy of technology, Lewis’ philosophical ideas related to science and technology can be found in much of his other writing, even the fiction (Hooper, 1996). The main ideas of *The Abolition of Man* were turned into fictional form in Lewis’ third science fiction installment *That Hideous Strength*, for instance (Lewis, 1945/1983, p. 7).

The breadth of Lewis’ scholarship causes certain difficulties for a researcher. First of all, he influenced so many fields that one has to search very broadly to cover the current literature; from health and bioethics to religious studies and theology to science fiction studies to philosophy (of science) to history of literature and literary criticism. Furthermore, because of his – certainly well-deserved – status as influential children’s and science-fiction writer and “house theologian” across Christendom, a literature search will also include articles and books written in tribute to Lewis rather than as critical scholarship. I have done my best to address both these difficulties by doing extensive literature searches and applying a critical eye to the selected research. Although there is an enormous amount of research on Lewis and his work generally, there is still very little by way of scholarly studies written about *The Abolition of Man*, despite the fact that it has proven to be so influential on later literary scholars, philosophers, bioethicists and even economists (cf. Daly, 1980; Jennings, 2010). Part of the reason for the anonymity of *The Abolition of Man* may lie in the high profile of Lewis’ other works coupled with a stealth-like spread of some ideas from the book, such as the introductory quote. The few studies of the book that exist are presented and used in the analysis below. The method of analysis employed is, as is common in literary research and philosophy, a qualitative method of text interpretation – hermeneutics (MacLean, 1986).

**THE ABOLITION OF MAN AND ITS PHILOSOPHY OF TECHNOLOGY**

*The Abolition of Man*, and the three lectures on which it was built, must be set against the background of the, in 1943, ongoing Second World War, but also some ideological and philosophical debates among intellectuals that Lewis was influenced by and participated in at the time. These debates concerned the relationship between scientific progress, technological advancement, and the future of the human race. The book was in itself part of a futurist debate about eugenics and how science and technology could alter the future of humanity, in relation to ideas of the science fiction novelist Olaf Stapledon, biologist J.B.S. Haldane and scientist turned historian and activist J.D. Bernal (Herrick, 2017; McGrath, 2013; Poole, 2012). After the parallel publication in 1943 of both *The Abolition of Man*
and the second science fiction installment *Perelandra*. Lewis also became engaged in a debate with science fiction novelist Arthur C. Clarke about whether humankind should engage in rocket-powered travel in space and conquer other planets (Poole, 2012). The issues of eugenics and space travel were related for some of the writers that Lewis engaged with, particularly Haldane and Bernal, because conquering other planets was for them seen as a logical next step in the evolution of a technologically modified human race (Herrick, 2017).

The argument of *The Abolition of Man* has many different layers; Lewis simultaneously juggles several topics under the common theme of the impending abolition of man. In the following, primarily the parts of his arguments relating to social, environmental and biomedical implications of technology are focused. The book is about education in general, and the teaching of English in secondary schools in particular. The book begins with a review of two anonymous textbooks in English literature, which, according to Lewis, convey the implicit message that human feelings and traditional values are contrary to reason. At the outset, the argument is about the difficulties of literary criticism, and Lewis thinks that the authors fail in conveying “why a bad treatment of some basic human emotion is bad literature” (p. 13). Lewis claims that “the task of the modern educator is not to cut down jungles but to irrigate deserts. The right defence against false sentiments is to inculcate just sentiments” (p. 13). He then goes on to introduce to the reader the concept of the *Tao*, an umbrella concept for universally accepted values.

The part of the book that is particularly interesting from a philosophy of technology point of view is part 3, the first section of which can be said to deal with social class implications of technology. Lewis here claims that the *Tao*, embodied in the human conscience, is the last bit to be conquered for an enlightened humankind in its quest for “power over Nature”: “Having mastered our environment, let us now master ourselves and choose our own destiny”, so the argument goes, according to Lewis (p. 33). Lewis equates “man’s conquest of Nature” with the “progress of applied science”, by which he means technology and offers three examples thereof: the airplane, the wireless, and the contraceptive. In peacetime in the Western world, anyone who is able to pay for these technologies may use them, but it does not therefore follow that this person is really exercising his or her individual power over Nature, although it may seem so. To support this argument, Lewis offers an analogy: “If I pay you to carry me, I am not therefore myself a strong man” (p. 34).

Furthermore, access to any of the three technologies can be withheld by other individuals, according to Lewis: those who own the sources of production, those who make the goods, or those who sell, or allow the sale, of the technologies (p. 34). Although not a Marxist himself, Lewis undoubtedly owes a great deal to Marxist thought for this part of the analysis (cf. Bimber, 1994; Dusek, 2006; McGrath, 2014; Williams, 1994). There is also another aspect, according to Lewis, namely that the powers invested in these technologies are double-edged:

Again, as regards the powers manifested in the aeroplane or the wireless, Man is as much the patient or subject as the possessor, since he is the target
both for bombs and for propaganda. And as regards contraceptives, there is a paradoxical, negative sense in which all possible future generations are the patients or subjects of a power wielded by those already alive. By contraception simply, they are denied existence; by contraception used as a means of selective breeding, they are, without their concurring voice, made to be what one generation, for its own reasons, may choose to prefer (p. 34-35).

It is in this sense that “Man’s power over Nature”, in Lewis’ view, is a power wielded by some individuals over other individuals, with nature as their instrument. In a second section, Lewis goes on to argue that the social implications of technology also have environmental implications. Lewis does not mean here that the uneven social power relation appears only when someone abuses power. On the contrary, it is inherent in this development that some groups will wield power over others, be it social groups, nations or generations. It is thus inevitable that technology, over time, has both social and environmental implications:

In order to understand fully what Man’s power over Nature, and therefore the power of some men over other men, really means, we must picture the race extended in time from the date of its emergence to that of its extinction. Each generation exercises power over its successors: and each, in so far as it modifies the environment bequeathed to it and rebels against tradition, resists and limits the power of its predecessors. This modifies the picture which is sometimes painted of a progressive emancipation from tradition and a progressive control of natural processes resulting in a continual increase of human power. In reality, of course, if any one age really attains, by eugenics and scientific education, the power to make its descendants what it pleases, all men who live after it are the patients of that power. They are weaker, not stronger: for though we may have put wonderful machines in their hands, we have pre-ordained how they are to use them (p. 35-36).

Each new increase in power will only result in fewer people attaining that power, and then exercising it over even more other people, be it, so to speak, in space or in time: “Each new power won by man is a power over man as well. Each advance leaves him weaker as well as stronger” (p. 36).

The third and last section deals with biomedical implications of technology. According to Lewis, “Man’s conquest of Nature”, or technology if we will, is eventually going to be applied to humans themselves, e.g. in eugenics, education or propaganda, and human nature will thus be the last part of nature to surrender to human power. However, since this human power is executed by fewer and fewer people, and because these people may only follow their “natural” impulses in executing this power, Lewis claims that “Man’s conquest of Nature turns out, in the moment of its consummation, to be Nature’s conquest of Man. […] The wresting of powers from Nature is also the surrendering of things to Nature” (p. 41, 43). In fact, he goes so far as to say that the subjects of this final conquest – a “world of post-humanity” (p. 45; cf. Hayles, 1999) – become dehumanized; they become “artefacts” (p. 40):
Man’s final conquest has proved to be the abolition of Man. […] We shall in fact be the slaves and puppets of that to which we have given our souls. It is in Man’s power to treat himself as a mere ‘natural object’ and his own judgements of value as raw material for scientific manipulation to alter at will (p. 40, 43-45).

The technological imagery here alludes to the fact that humans, at this final stage, treat themselves in the same way that they have treated nature, as something artificial or as an artefact. This was one of the reasons that Lewis thought that humankind was morally ill-equipped for space travel, because it would result in an extension of this kind of thinking also to other planets and their possible inhabitants (Poole, 2012). “Mere nature” or “natural object”, in this sense, are expressions of what humans have conquered, because we reduce nature to an artificial abstraction or, by extension, an object, in order that it may be conquered, epistemologically or ontologically (p. 41-44; cf. Meilaender, 2014). Lewis is of the view that Francis Bacon’s goal for humankind to perform, through science, “all things possible” (p. 46) will lead to this post-human condition, unless surrendered to the Tao.

C.S. LEWIS’ PHILOSOPHY OF TECHNOLOGY – IMPLICATIONS FOR TECHNOLOGY EDUCATION

Although Lewis was part of a first mid-20th century wave of philosophy of technology in which philosophers mainly critiqued the negative impacts of technology on society (Mitcham, 1994; de Vries, 2017), he essentially went beyond that and pointed to the human and moral dimension behind such impacts (cf. Ellul, 1962). His philosophy is therefore very consistent with present-day conceptions of technological literacy where critiquing technology-in-society is an integral part (Williams & Stables, 2017). Because technology education emerged out of a practical, craft-based educational tradition in many countries (Hallström, 2018; Jones, Bunting & de Vries, 2013), the broader technological literacy with focus on social, environmental and biomedical implications of technology still needs developing. The philosophy of technology outlined in The Abolition of Man could therefore be used to inform and elaborate the notion of technological literacy for the early 21st century.

The conception of technological literacy today consequently includes a critique of technology in society which is both research based (e.g. Jenkins, 1997; Dakers, 2006) and based on curriculum development (e.g. Pearson & Young, 2002). Several technology curricula around the world have subsequently adopted these aspects of technology as part of the technological literacy that is to be learned. The New Zealand technology curriculum, for instance, states under the Nature of Technology strand that:

[Students develop an understanding of technology as a discipline and of how it differs from other disciplines. They learn to critique the impact of technology on societies and the environment and to explore how
developments and outcomes are valued by different peoples in different times. As they do so, they come to appreciate the socially embedded nature of technology and become increasingly able to engage with current and historical issues and to explore future scenarios (Ministry of Education, New Zealand, 2007, p. 32).

A similar sentiment permeates also the American Standards for Technological Literacy: “Besides understanding how particular technologies are developed and used, students should be able to evaluate their effects on other technologies, on the environment, and on society itself. The benefits of a technology are usually obvious […] but the disadvantages and dangers are often hidden (ITEA, 2007, p. 4). “Design and Technologies” in the Australian Curriculum has the following rationale:

In an increasingly technological and complex world, it is important to develop knowledge and confidence to critically analyse and creatively respond to design challenges. Knowledge, understanding and skills involved in the design, development and use of technologies are influenced by and can play a role in enriching and transforming societies and our natural, managed and constructed environments (ACARA, 2017).

The above curriculum examples show, first of all, that critiquing technology and its social and environmental implications is indeed an important component of technological literacy. Secondly, they also show that these implications are in some way related. However, what is missing in these curricular examples is a clear rationale for looking at them as part of the same phenomenon, which would be necessary for an application in technology classrooms. Curricular documents are by nature concise and sketchy, so this should come as no surprise. A recent study shows, however, that technology teachers do not really know how to involve elements of critique in students’ design and make activities (Schooner, et al., 2017), so the absence of such a rationale seems to have an impact also at the classroom level.

It is here that the philosophy of C.S. Lewis can assist. The three aspects of The Abolition of Man that were outlined above can be summarised as three types of implications of technology under the theme of “Man’s power over Nature”:

- **Social class implications**: human innovation and use of technology involves a power element, and technology thereby confirms, and even exacerbates, class relations and class boundaries.
- **Environmental implications**: human power over nature affects not only people and social groups but also the environment, by causing, for example, health problems and environmental pollution.
- **Biomedical implications**: the endpoint of human power over nature is the power to alter human nature, which could mean a number of things. Here I will focus on various forms of biotechnology, for example, genetic modification and cloning, but also different kinds of technological modifications of the human body above the cell level, such as digital
implants. Furthermore, there are unintended results of environmental pollution such as genetic disturbances of various kinds.

Lewis’ great contribution to the philosophy of technology was to connect these three implications by bringing them all together under the same umbrella – as a single techno-ethical problematic – that also follows a kind of chronology, which was outlined in the previous section. Here I will divide Lewis’ three kinds of implications into two areas that could both inform and develop technological literacy and make up a rationale for dealing with these kinds of issues in the classroom. The first area, *social and environmental implications* of technology, was evident in history up until Lewis’ day, whereas the second area, *biomedical implications* of technology, was still something of a future, possible scenario from Lewis’ vantage point.

The first area is of paramount importance; Ihde (1993) even considers the environment as a foundational issue in the philosophy of technology, and argues:

> [T]he quality of the environment is a *foundational* issue and […] must be addressed. But this issue is also enmeshed in a complex *cultural philosophical* set of issues which entail nests of interrelated concepts. For example, the concepts technology, environment, and nature are all interrelated. […] our very concept of environment is related to our notion of, and attitude towards nature, which in turn, entails a concept of what it means to be human, and into all of which must be fitted our means of interaction with each of these dimensions, technology (Ihde, 1993, p. 124).

Social and environmental implications of technology have a long tradition of being viewed as a common problematic in Marxist thought (e.g. Engels, 1845; cf. Harvey, 1990; Lefebvre, 1991), which Lewis was familiar with but did not sympathise with in its entirety (McGrath, 2014). Today there is the so-called *environmental justice movement*, which started out as a social movement in the United States in the 1980s but also became an interdisciplinary field of scientific inquiry (Colten, 2002; Washington, 2008). The core of this way of viewing environmental problems is that hazards in the environment have to do with inequitable distribution of resources and land, where minorities, poor and underprivileged populations often lose (Arney, 2017). Washington writes that:

> A key concern then and now in environmental justice (EJ) struggles and debates has therefore centered on the ethics and legality of societal decision making that leads to disparate environmental health risks carried by already marginalized communities. Professional and academic scholarship to study these issues emerged almost concomitantly with the movement itself from multiple disciplines especially those of law, sociology, and public health (Washington, 2008, p. 1).

The list of environmental injustices that could be addressed in technology education is extensive; from historical environmental inequity during industrialisation in which workers and poor missed out on environmental technologies such as water supply and sewerage systems (e.g. Hallström, 2011) to
present-day injustices such as the fact that poor and minority neighbourhoods and infrastructure suffered more from the consequences of hurricane Katrina than the well-to-do in New Orleans did (Kates et al., 2006). The environmental justice ideas can also be extrapolated to a global level, where some countries could be considered as poor or underprivileged compared to others economically and environmentally.

The bottom line of Lewis’ argument is that environmental injustices always boil down to social issues and power of some humans over others, with nature and the environment as the instrument, in one way or another. In the technology classroom this means that the teacher can focus on the connections and interactions between social and environmental issues, when talking about the implications of technology. For example, the above extract from the American Standards mentions evaluation of technology’s “effects on other technologies, on the environment, and on society itself. The benefits of a technology are usually obvious […] but the disadvantages and dangers are often hidden (ITEA, 2007, p. 4). These dangers may not only be obscure urban air pollution or miniscule particles from diesel engines, but also the fact that poor neighbourhoods actually suffer more from these dangers than do the richer ones.

The second area of biomedical implications is as foundational to the philosophy of technology as the first one because these implications can be seen as a direct result of the social and environmental implications. Various medical technologies raised ethical questions as humans became increasingly capable of altering the human body and affecting human health. Lewis distinguished himself here as a natural law philosopher, in contrast to the dominating utilitarian medical ethicists (Ihde, 1993; Mitcham, 1994). He was also particularly perceptive about the philosophical and ethical concerns of – from his standpoint – future possibilities of altering the human body, despite the eugenics of his own time being very limited compared to the development in genetic improvement and technological implants in the 2010s.

However, it is clear that the philosophical underpinning of human enhancement was already in place in the 1930s and 1940s, through Bernal, Haldane and others. Today, these ideas have become even more elaborated and widespread through, for instance, the Association for the Advancement of Artificial Intelligence and the Future of Humanity Institute at Oxford (Bostrom, 2005; Herrick, 2017). The philosopher Nick Bostrom, director of the latter and co-founder of the World Transhumanist Association, describes a transhumanist agenda for a posthuman future:

Transhumanism is a loosely defined movement that has developed gradually over the past two decades. It promotes an interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition and the human organism opened up by the advancement of technology. Attention is given to both present technologies, like genetic engineering and information technology, and anticipated future ones, such as molecular nanotechnology and artificial intelligence.
The enhancement options being discussed include radical extension of human health-span, eradication of disease, elimination of unnecessary suffering, and augmentation of human intellectual, physical, and emotional capacities. Other transhumanist themes include space colonization and the possibility of creating superintelligent machines, along with other potential developments that could profoundly alter the human condition. […]

Transhumanists view human nature as a work-in-progress, a half-baked beginning that we can learn to remold in desirable ways. Current humanity need not be the endpoint of evolution. Transhumanists hope that by responsible use of science, technology, and other rational means we shall eventually manage to become posthuman, beings with vastly greater capacities than present human beings have (Bostrom, 2003, p. 3-4).

In recent years, Bostrom has warned of the dangers of artificial intelligence and superintelligent machines, so although essentially positive to human technological enhancement he has also taken a critical stance (e.g. Bostrom, 2014). The general idea of transhumanists is that it is by embracing new technology that humankind can be protected from, for instance, superintelligence, not by banning certain technological advancements (Bostrom, 2005).

Scholars from various disciplines and traditions have also critiqued Bostrom’s views of human enhancement. Some, like Herrick (2017), criticise the altering of human nature on religious grounds, not so far from Lewis’ natural law arguments. Others, like Fukuyama (2009), critique transhumanism on liberal, democratic grounds, with arguments very similar to Lewis’ where social power and inequality are central. Still others criticise an over-reliance on technology, but the core of the criticisms has to do more with ethics than technology itself.

Lewis was not skeptical of technology in itself but of the social dangers of human enhancement, because it would lead to some (enhanced?) people with power controlling the enhancement of people with less power. It is here that a discussion of transhumanism and a posthuman society can begin in the technology classroom. Sentiments such as the following one from the New Zealand technology curriculum could guide such discussions: “[Students] learn to critique the impact of technology on societies and the environment and to explore how developments and outcomes are valued by different peoples in different times” (Ministry of Education, New Zealand, 2007, p. 32). Since this second area of biomedical implications of technology is still to some extent about exploring “future scenarios” (p. 32), technology teaching must necessarily be about what might possibly happen. Ethical questions that the teacher could engage the students with include: What good and/or bad could come from human enhancement? Who should control the evolution of genetic engineering and human implants? What happens if humanity loses control over, for example, artificial intelligence?
Lewis’ philosophy had evolved from an explicit scientific materialism in the 1920s into a conservative idealism in the 1930s and 1940s that was no doubt affected by his religious conversion (McGrath, 2014). However, *The Abolition of Man* arguably shows that Lewis the philosopher was open to ideas on the state of society, technology and nature regardless of origin, as shown, for example, in his Marxist-inspired critique of technology in the hands of those in power. In this sense, the transition described by McGrath (2014) is not the whole truth on this matter. As a philosopher but perhaps even more so as a literary historian, Lewis was eclectic and broadminded, which can be seen also in his later writing (e.g. Lewis, 1964). As we have seen Lewis’ ideas were also subsequently taken up by philosophers, historians, sociologists, educationists etc. from all facets of the political spectrum, which tells us that the ideas and problematics he dealt with were in many ways universal. This goes both for the environmental justice ideas and the natural law bioethics, where power relations are at the heart of his argument.

As stated earlier Lewis was one of several contemporary philosophers who critiqued technology from a societal point of view – in a Continental, or what Mitcham (1994) would call a humanities philosophy of technology, tradition. But the question is whether Lewis really had the negative outlook of, for example, Heidegger or Ellul? In many ways Lewis resembled Ellul in that he suggested an alternative, religious ethics, a kind of ethics of nonpower (Mitcham, 1994, p. 61). Lewis’ view of technology was also ambivalent, however, which can be said of his sources of inspiration, Christianity and Marxism, as well. In Christian thought technology is partly something negative because worldly possessions are seen as something hindering a good Christian life (Petrina, 2017). On the other hand, there are also passages in the Bible with very positive views, for instance, the book of Nehemiah which narrates the rebuilding of the Jerusalem wall and details the important contributions of craftsmen from various social classes. Similarly, Marxism has a built-in ambivalence since the material base is seen as the most important factor of societal change. While technology was corrupted in the hands of the bourgeoisie it was also considered a potentially positive force for the working class revolution (de Vries, 2017).

In a sense it is the social context of technology that Lewis critiques, not technology in itself, since it is the few people with power over the majority that is considered the problem in *The Abolition of Man*. Although Ellul acknowledges the social context, his view of human control in a technological society is much more negative (Ellul, 1962). On the other hand, Lewis also specifies eugenics, contraception and “scientific education” as technologies that, in the hands of the powerful Conditioners, are particularly destructive in that they can alter the human nature of future generations, the environment and ultimately also the development and use of future technologies. So, in conclusion, Lewis’ ambivalence to technology is yet more optimistic than Ellul’s; technology is potentially good but its uses must be subordinated to the *Tao*, much like all other human activities.
In Feenberg’s view it was the social context that even Marx critiqued. This is therefore the basis for a rather hopeful view of technology:

Modern technology as we know it is no more neutral than medieval cathedrals or the Great Wall of China; it embodies the values of a particular industrial civilization and especially those of elites that rest their claims to hegemony on technical mastery. We must articulate and judge these values in a cultural critique of technology. By so doing, we can begin to grasp the outlines of another possible industrial civilization based on other values (Feenberg, 2002, p. v).

Although Feenberg has a very clear Marxist standpoint, the values on the basis of which to critique technology are seen as democratic values (Feenberg, 1999), which may not be so far off from Lewis’ Tao.

Finally, the take home message for technology education is to let students engage in Feenberg’s (2002) cultural critique of technology, with the ultimate goal of imagining alternative future societies with alternative technological regimes, which are under democratic human control. The “tools” for this have been provided by Lewis: the social, environmental and biomedical implications of technology should be seen as one and the same ethical problem, namely a result of some people wielding power of other, often in various ways disadvantaged, people. A cultural critique of technology is therefore also a critique of social relations and (political) power. As often in philosophy, however, its spokespersons have not provided answers so much as questions. Questioning and critiquing are therefore an important contribution of the philosophy of technology to technology education. It is now up to the teachers to provide an educational milieu which promotes a “cultural critique of technology”, so that the students may acquire a technological literacy and be a part of bringing about a democratic socio-technological future society.

REFERENCES


**AFFILIATIONS**

*Jonas Hallström*

TESER, Technology and Science Education Research

Dept. of Social and Welfare Studies

Linköping University, Sweden
NOTES

1 The same can be said also about other philosophers not immediately associated with technology such as Jacques Derrida (see Sjöstrand, 2015).

2 Although influenced by Lewis, they were not always in agreement with him. See, for example, Fukuyama (2002) and Jordan (2008).