The Moral Use of Technology

JAMES GARVEY

There is a well-worn example—well worn in some circles, anyway—of what you might think of as racist bridges.[1] Robert Moses, the celebrated New York architect, designed unusually low bridges over the roads from Long Island to Jones Beach. The bridges were designed in this way so as to prevent the poor and predominantly black locals from travelling to the beach by bus—the affluent, white car owners can slip under them with ease. The bridges prevent certain members of the community from enjoying the beach as surely as a phalanx of clansmen. Perhaps the strongest moral drawn from the story is the claim that the bridges are political. The objects themselves are imbued with dubious values.

I am not sure how much of the story to credit or exactly how to interpret the conclusion, but I do at least find it suggestive.[2] If moral questions might be raised by something as innocuous as a bridge, it is possible to start worrying about the effects of other everyday artefacts, the technological stuff we are in contact with daily. You might worry about the morally acceptable uses of all of the stuff; you might wonder whether or not you are making a moral mistake in using technology in some way rather than another or in using it at all. Let us try to pin some of this down.

Is technology neutral, a neutral means to whatever ends we have in mind, or is it, instead, somehow imbued with moral and political value, a kind of autonomous force which brings about its own ends? This question will make a little more sense once we consider the two answers it suggests. The answers need names, and I'll go along with at least some of the literature and call the former 'the instrumental view' and the latter 'the autonomy view'. In this paper, what I really want to determine is whether or not the answers can be brought to bear on a second question about technology, a slightly more human and certainly smaller question, a question which might even matter: how should we think about the

[1] Langdon Winner, 'Do Artefacts Have Politics?', *Daedalus* **109**, No. 1, 1980, 121—36.

[2] For a generally clear-headed, sceptical discussion of the example, see Bernward Joerges, 'Do Politics Have Artefacts?', *Social Studies of Science,* **29**, No. 3, 1999, 411—431.

moral dimension of mundane technology, in particular, what is the right way to use mundane technology? In a time-honoured philosophical tradition, I will tell you about both views, try to show that neither one is much help, and then point to the beginnings of an alternative.

You might think, at the outset, that you are owed a definition of technology, in particular, a definition of mundane technology. You are not going to get one from me, at least not a formal one. Definitions tend to settle debates without breaking sweat, and it might be best to avoid settling on one for as long as we can. I'll give an example of this sort of thing which will also convey, in a backhanded way, the kinds of definitions of technology operative in at least some thinking in this neighbourhood.

Kline identifies four general uses of the term 'technology'.[3] The most common use, he says, equates technology to hardware, manufactured artefacts, shoes and ships and ceiling wax, but not cabbages or kings. The second use of 'technology' is manufacturing hardware, the equipment used to manufacture objects—this might include people, the human cogs in the wheels of production. The third sense identified equates technology with techniques, know-how or methods used in the production of objects. The fourth conception of technology, the one favoured by Kline, takes it that technology is understood as sociotechnical systems of manufacture and use: a system combining both the production of hardware and the people who use it, as well as other elements required to put the hardware to use.

The point of at least the first three definitions can seem more or less obvious. The word does get used to pick out stuff or the manufacture of stuff or the know-how required to manufacture stuff, but you can wonder about the fourth definition. The point of the fourth sense of the word 'technology', for Kline, seems to be that an adequate definition has to include more than just the immediately obvious material stuff, because the tasks performed with the use of technology require more than the material stuff. What's required to drive a car is not just the car, but the driver and her knowing how to drive, car manufacturing plants, roads, gas stations, laws, rules of the road and, in general, the many social and technological structures underpinning the manufacture and use of cars. Without all this, a car could not be driven: so all of this is car technology. You can be rightly suspicious of Kline's thinking here,

[3] Stephen J. Kline, 'What is Technology?', *Bulletin of Science, Technology & Society*, 1985, 215–18.

but for now just notice the implications of the definitions for our general question about technology.

Without getting too far ahead of ourselves, you can probably already see that plumping for something along the lines of his first, second or third definitions—technology as tools, the manufacture of tools, and the knowledge required to manufacture tools—will land you with the view that technology is a neutral instrument or set of instruments. Opting for something closer to definition four, technology as a sociotechnical system, will make technology seem like something more than a neutral means, something closer to a burgeoning, autonomous force. You can also probably already see the sense in which thinking about technology as a neutral means can actually lead to the view that technology has to be something more than just a neutral means. Kline has done some thinking about the tasks that we perform by using technology (instrumentalism) and come to the conclusion that we cannot understand those tasks without understanding the sociotechnical systems which underpin them (something near autonomy). I'll try to make both points more clear in the following sections.

If you allow that I am understandably reticent about settling on a definition of technology, you might still insist on some explanation of the word 'mundane'. There is a distinction, an admittedly barely rough and ready one, between mundane and exciting technology. Moral and political philosophers of a practical bent are everywhere exercised by questions concerning exciting technology: nuclear weapons, unravelling the human genome, GM crops, cloning, stem cells, senescence technology, nanotechnology, thinking machines, virtual reality, and on and on. The stakes are thought to be high, and probably they are. If we make a moral mistake about nuclear weapons, it's the end of the world.

Exciting questions about exciting technology are, of course, pressing and worth our attention, but I want to avoid thinking about them. I want to avoid such questions mostly because they scare me but also because certain aspects of exciting technology can be a little distracting, can nudge us away from the point of our original question about the moral dimension of technology generally. It also nearly goes without saying that a consideration of exciting technology would drag us away from our second question, which concerns just mundane technology and the moral implications of its use. Other and better minds are covering the exciting territory well enough. Anyway, if we make a mistake in our thinking about mundane technology, it's not the end of the world.

If formal definitions are not on the cards, we can make do with ostensive ones. Mundane technology includes electronic gadgetry like mobile phones, computers, cameras, camcorders, DVD players, as well as heftier items like cars, boats, buildings and bridges, and other similar things. These things are all tools, but if you want to think of them as something more, if you want to join Kline and think of them as objects embedded in sociotechnical systems or even as sociotechnical systems, you are welcome to do so. It is hard to find the objects themselves very interesting, primarily because they are pervasive, more or less everywhere. Their being everywhere, though, should make them a little interesting. Mundane technology has more effects on us than might be imagined—just because we are surrounded by it and interact with it from moment to moment—and some of those effects might be moral or political in flavour. The little drips and drabs can add up. You can wonder about all those little effects, and you can look to the instrumental view or the autonomy view of technology for help in thinking about them, which is what we'll now do.

1. The Instrumental View

The thesis of instrumentalism is expressed in contemporary thinking mostly by opponents. Those who consider it tend to mention it briefly, perhaps pointing out that it is 'the common sense' or 'default' position before quickly moving on to something else. Feenberg, who certainly has moved on to something else, says that instrumentalism 'offers the most widely accepted view of technology. It is based on the common sense idea that technologies are "tools" standing ready to serve the purposes of their users. Technology is deemed "neutral", without valuative content of its own'.[4] Arguments for the view are a little thin on the ground. The instrumental view is supposed to be the older view. Many point to Bacon in an attempt to identify its beginnings.

What you find in Bacon, however, is nothing like an argument for the view that technology is neutral, but something closer to a vision or a hope. Nature, for Bacon, consists in a chain of hidden causes. Human beings cannot break the chain, but coming to understand the chain is, in itself, a kind of power over the natural world. Nature, Bacon sloganizes, is only overcome through obedience.

[4] Andrew Feenberg, *Critical Theory of Technology* (New York: Oxford University Press, 1991), 5.

There is, in all of this, certainly more than just a whiff of the view that technological innovation is merely a means to our ends, perhaps because the emphasis is clearly on the ends. The hope, in harnessing nature, is 'an improvement of the estate of man ...an enlargement of his power ...so as to provide man with his bread, that is, with the necessities of human life.'[5] Bacon is after more than just bread. His claim is that technology is our way of making things better for ourselves, getting what we need not just to live—scrabbling around like animals would accomplish that—but to improve the human condition. Bacon thinks that technological and scientific innovation delivers not just bread but a host of technological delights. A consideration of what he calls 'the true state of Salomon's house' will tell you as much.[6]

The technological utopia he envisages includes caves where artificial metals are produced, alongside wondrous 'coagulations' which prolong human life and cure disease. There are great houses where whole weather systems are replicated—complete with snow, hail, rain, lightning, and, rather oddly, where the generation of frogs and flies is undertaken. Mechanical devices churn out paper, silk, 'dainty works of feathers of wonderful lustre'. Furnaces hum along, imitating the sun's heat. Engines produce astonishing motions. Terrifying weapons are stockpiled. 'These are (my son) the riches of Salomon's House.' Not bad, you might think, but there follows a slightly disturbing discussion of various emissaries of the state, who disguise themselves, sail off to other lands, and steal the books, artefacts and experimental methods of other nations. Salomon's house has excellent riches in it, but still more excellent riches are required, and a little burglary is a small price to pay for them.

Is it going too far to suggest that something along the lines of Bacon's near delirious fascination with the fruits of technology and scientific enquiry is a foundation for the instrumentalist view? Bacon's emphasis, it seems clear, is on what the study of nature can do for us, and he certainly has high hopes. His eyes are fixed almost entirely on the intended ends. Technology is nothing more than instruments, devices, maybe knowledge used to achieve something nearly miraculous, but it's the something nearly miraculous that gets attention. It might be right to say that this is the default view.

[5] Francis Bacon, (Peter Urbach and John Gibson, Ed., trans.) *Novum Organum* (Chicago and La Salle: Open Court Publishing, 1994), 293.

[6] Francis Bacon, (Jerry Weinberge, Ed.) *New Atlantis* and *The Great Instaturation*. (Wheeling, IL: Harland Davidson, Inc, 1989), 71–83.

Bacon shows us that if our eyes fall comprehensively on the ends we hope to achieve, our default conception of technology is merely a means for getting something else.

It's not just Bacon. You can find this emphasis on the ends in lots of places, and in more or less every case the technological means just fall into a neutral background. Miller, writing in 1803, tells us that the fact that mechanical arts 'have contributed, and will probably yet contribute, in a considerable degree, to the abridgement of labour, to the convenience and profit of artists, and to the excellence and beauty of manufacture, is too obvious to require particular explanation'.[7] His essay mentions chemistry, spinning cotton, steam engines, bridges, mills, carriages, printing, tanning, dyeing, metalwork and much else, and in each case the objects or processes themselves get only a moment's notice. What matters are the marvellous results. You can read a little American post-war rhetoric, talk of the march of progress from the 40s through to the 70s, and come to the conclusion that not much has changed. You might still be able to hear it today too.

Noticing expressions of instrumentalism, if that is what they are, is not to say that there have been no dissenting voices since Bacon. We have had plenty of Shelleys, and Huxleys, and Orwells; we've had Romantic disillusionment, not least with Rousseau; and we've had Luddites. You might wonder whether those dissenting voices are themselves thinking just about the ends. The point is, though, that if we are after arguments for the view that technology is a neutral instrument, what we usually find is something closer to a general failure to see anything but the ends we intend. What we get are visions and hopes, with technology itself falling neutrally to one side.

Can we do any better than this? Are there arguments for the instrumentalist view of technology? We'll have a look at two of them. The first takes it that means, including technological means, have moral value only derivatively, given the ends at which they are directed. The second infers neutrality from the functional promiscuity of technology. The two arguments might really only be variations on a single theme, but I'll treat them separately anyway, as I can't find a way to articulate a single argument which covers the ground as thoroughly as dividing things up.

Reflection on the nature of means and ends can land you with the view that means acquire value only with reference to an end.

[7] Samuel Miller, 'The Mechanic Arts', *A Brief Retrospect of the Eighteenth Century* (New York: T. & J. Swords, 1803).

Without an end in view, the means themselves are neutral, without value. This is roughly where Aristotle ended up—or, rather, began—and probably philosophy has largely followed him. In the first lines of *Nicomachean Ethics*, Aristotle claims that every art, investigation, action or pursuit it thought to aim at some good.[8] There is a sense in which our aims would be circular and ultimately pointless if they were just directed at each other, at other minor ends. If this is done for that, and that for something else, and that something else for another something, which might turn out just to be the original goal, with no supreme or general goal in mind, then we are going around in breathless, little circles. All of the little goals must themselves aim at some supreme goal, which Aristotle calls 'the good' or 'happiness', otherwise human beings are left with a potential infinity of minor aims and no chance of an ultimate point to action.

You need not buy into talk of 'the good' to take Aristotle's point here. The important claim is that our actions have no value in themselves but only acquire value if they aim at something which itself has value. Aristotle, of course, is talking about minor ends, like wealth, and he is arguing that such things only have value if pursued for something good in itself, say, happiness. Reasonable people have thought since that there might be more than one thing with intrinsic value, or at least more than one thing worth pursuing for its own sake, or, at the very least, lots of things which are simply worth pursuing. You can swap this pluralist view for Aristotle's talk of 'the good' if you like. Either way, you are left with the claim that undertaking an action has value only if there is a valuable end in view. The value of the means, it seems a reasonable way of putting it, is parasitic on or derivative of the value of the goal or end of the action.

Grant offers a nice statement of this line of thinking translated into talk of the value of technology. He starts by noting that value is of two kinds: intrinsic or instrumental. Either a thing is valuable in itself or it enables us to get something which is valuable in itself. The value of ends is intrinsic, and 'the value of the means derives from the value of the end, and is, moreover, secondarily determined by how efficiently it serves it'.[9] Grant is thinking of technology

[8] Aristotle, (D. Ross, trans.), *Nichomachean Ethics*. (Oxford: Oxford University Press, 1998).

[9] Robert Grant. 'Values, Means and Ends', in Roger Fellows, Ed., *Philosophy and Technology*. (Cambridge: Cambridge University Press, 1995), 183.

generally when he concludes that 'the primary value of technology is instrumental, and is determined by its ultimate end'.[10] For Grant, the ultimate end, in so far as technology generally conceived has an ultimate end, is freedom from drudgery, a kind of liberation.

If our interest is the moral evaluation of particular instances of technology, Grant goes on to argue, we can note not just the freedom the object gives us, but also the ends we have in view when we use it. Technological objects themselves cannot be rationally criticized except with respect to their adequacy as means to certain ends. It is making the right choices with regard to ends that is the entire subject-matter of the moral evaluation of technology. 'It is precisely because technological processes and procedures are neutral ...that they, or more accurately the ends they subserve, require moral scrutiny'.[11]

Is it true that means are neutral, acquiring moral value only derivatively as means to intrinsically valuable ends? I get the feeling that there is more to it than this. Suppose you and I want to do something about poverty in London. We think we can do the most good by helping poor children, so our end in view is lowering the rate of child poverty in London, which stands at, say, 10% of the child population. We embark on means-ends reasoning, and I offer you the following suggestion: we can lower the level of child poverty by distributing poisoned sweets in the schools of Southwark. We've got a good end in view and an efficient means which serves it. It won't cost much, and the percentage of poor children in London really will go down very quickly if we follow my plan. If means are neutral, acquiring value only derivatively with reference to an end, and our end is a good one, then what's the problem with the means I'm contemplating?

You might want to object and say that the end we have in mind has not been carefully articulated. What we meant was not just a change in the numbers, but eliminating poverty or some other, more clearly good good. Have a think about all the usual objections to utilitarianism which have to do with justice, scapegoats, and moral intuitions concerning the dubious means a good utilitarian might be forced to countenance in order to bring about a good end, namely the greatest happiness for the greatest number. The problem for the utilitarian and the instrumentalist view of technology is that means are not obviously neutral, and when we evaluate them we have more than just efficiency in mind.

[10] *Ibid.*, 181.
[11] *Ibid.*

The independent reasons you might have for finding means dubious seem to be of two sorts. First, you might have a problem with the means themselves. Second, the means might secure a desired end, but they do more besides, and you might be worried about the other consequences the means bring about. Think again about distributing poisoned sweets in Southwark. Someone might object to the implementation of these means by saying, 'But that's murdering children, and murdering children is wrong.' or by saying, 'That will lower the poverty rate, but it will also result in dead children, and that consequence is wrong.' Something might hang on how finely we describe actions, but I'm going to ignore it for now. In the first reply, the problem is the means themselves. In the second, there is still a sliver of the view that means acquire value from ends, but it's no longer just the ends we have in mind which matter. Means sometimes have consequences in addition to those intended. So there has to be something wrong with thinking that the value of means comes only from reflection on the ends towards which they are directed.

Well, all right, you might think, but the question is about the neutrality of technology and you have been going on about poisoning children. The examples do not match up. In one case we are talking about means as objects used in actions and in the other case we are talking about actions themselves. Actions can be morally evaluated by considering the actions or their consequences. Objects are just objects. Of course, we do things with technology, and when we do something with technology we can evaluate our actions in the usual way, but the objects have no consequences. We can use them in various ways, and it's the various ways we use them which gives them a moral flavour. The objects are still morally neutral.

We have slipped rather easily from talking about means and ends to talking about the functional promiscuity of technology, what might be part of a different argument for instrumentalism. It might be claimed that technological objects can be put to many different uses. The objects are not for anything in particular, and this is where the thought that objects are morally neutral originates. A hammer might be used to build a house or as a murder weapon. Technological objects, like stem cells, can turn into anything. Precisely because of the functional promiscuity of technology, technology considered just in itself is neutral.

A number of thoughts could and probably should be disentangled here, but I'll focus just on the presupposition that objects are neutral because they are not for anything in particular. It is this

claim or something like it that the argument from functional promiscuity needs for the conclusion that objects are neutral. You can hear the connection between promiscuity and neutrality in one of Grant's claims, a passage we already noted but one worth considering in full in this connection: 'technological processes and procedures are neutral—that is to say, employable in principle in any cause, good or bad ...'[12] No one disputes the claim that objects can be used in different ways, but does this force us to accept the further claim that objects are not for anything in particular?

Promiscuity and neutrality are not tied together as strongly as might be expected. I know that a gun can be used as a paperweight or a hammer, but that need not stop me from joining Kurt Vonnegut in thinking a gun is 'a tool whose only purpose was to make holes in human beings'.[13] The two views are not inconsistent. You can think of an object as having a primary function or functions, as well as other possible functions.

Noticing the consistency of the claims is enough for me to reject the alleged tie between neutrality and promiscuity, but you might want more to go on. There are two lines of thought here, both issuing in the claim that objects are for something in particular, and both are a little shaky. According to the first, we cannot help but see objects as for something; according to the second, objects really are for something, whether we see it or not.

One might say that although it is possible, strictly speaking, to abstract an object away from its context and thus come to think of it as neutral 'in itself', objects are never really presented to us in this way. We are social creatures and language users, and as such we know what things are for. You might, in other words, argue against instrumentalist neutrality by claiming that objects suggest a use to us, given our social or cultural background. No one growing up in the West can see a gun and think of all its possible uses as on a par with its primary use. This might be the line Heidegger takes when he says that an object might be seen as 'present to hand' or 'ready to hand'.[14] Tools, certainly, fall into the latter category.

You might be persuaded that human beings see tools as for something because our brains have evolved to do just that. Tools are so much a part of our evolutionary history that we have evolved

[12] Grant, 187.

[13] Kurt Vonnegut, *Breakfast of Champions*, (London: Cox & Wyman, 1992), 49.

[14] Martin Heidegger, (John Macquarrie and Edward Robinson, trans.) *Being and Time*, (New York: Harper and Row, 1962).

to pick them out as quickly as we notice potential mates or enemies. I don't want to make very much of this, but there might well be empirical support for the view, coming from certain cases of brain injury or lesion. Individuals with damage to the posterior inferior temporal lobe and anterior lateral occipital region are entirely unable to name tools, and tools only.[15] Some might be willing to conclude from this that normally functioning human brains have modules dedicated to seeing objects as for something, seeing objects as tools.

The foregoing reflections might nudge you towards accepting the view that a piece of technology is for something despite its functional promiscuity, but you might still have one last worry. Even if we see objects as being for something in particular, that does not mean they are for something in particular. Considered just in themselves, abstracted away from social contexts, objects really are neutral. I confess that I am having some trouble thinking about something like a hammer in this sort of abstraction. And, anyway, even if this sort of thought is possible, do you not end up with the view that anything you like is neutral when abstracted away from the relevant contexts—a piece of fine art or a selfless act?

Put the question aside, because we need not answer it. If you are after the claim that objects have value in themselves, there are some considerations which might be suggestive. Objects are, after all, designed by people with particular uses in mind. As Monsma argues, technology is value-laden because technological objects are unique creations, designed to function in a particular and limited way.[16] The point is put a bit more strongly by Franklin, who might not have read Hume, and who goes so far as to say that an object's use is 'incorporated a priori in the design and is not negotiable'.[17] You need not go quite so far to conclude that because human beings build things for certain purposes, those things are suited to some activities and not others. The things themselves might well have inbuilt, primary functions.

I am not sure what to think about all of this. What is clear, though, is the fact that objects might be put to many uses does not

[15] Martin, A, J. V. Haxby, F. M. Lalonde, C. L. Wiggs, and L. G. Ungerleider, 'Discrete Cortical Regions Associated with Knowledge of Colour and Knowledge of Action', *Science* **270**, 102—105.

[16] S. U. Monsma (Ed.) *Responsible Technology,* (Grand Rapids, MI: Eerdmans, 1986).

[17] Ursula Franklin, *The Real World of Technology*, (Toronto: House of Anansi Press, 1999), 18.

undercut the conviction that objects have a primary or set of primary uses. You can think that objects suggest a use to us because of our culture, or because the objects are built to fulfil some purposes and not others, or, I suppose, because objects are in fact used by us primarily in some ways and not others. However you choose to think about it, you are left with the view that objects are for something. They really do have particular consequences. They are not neutral in the required sense.

Is the instrumental view much help in thinking about the moral dimension of mundane technology? We have noticed three mistakes in it. First, it is a mistake to have our eyes only on Baconian delights in reflection on the moral value of technology. Second, it is a mistake to think that we evaluate technology just in terms of the ends we intend. Sometimes we evaluate the means themselves and sometimes we evaluate the means with an eye on consequences other than those intended. Third, it is a mistake to make too much of the fact that objects might be used in different ways. Objects are for some purposes and not others, and this can give us reason to suspect that they are not neutral. If the neutrality view is a non-starter, we can look elsewhere for help in thinking about mundane technology, namely, we can consider the autonomy view.

2. The autonomy view

You have only to dip your toe into the literature on autonomy, which is about as much as I have managed, to realise that it is a swamp. Finding a common claim or set of arguments is not easy. Certainly there is a rejection of the neutrality of technology, but the rejection is based on something more like a Gestalt shift than an argument. The main thesis, if there is just one, is put in a number of ways, but the general idea is that technology is somehow autonomous, not under our control. Winner, for example, identifies several expressions of the thesis:

> In some views the perception of technology-out-of-control is associated with a process of change in which the human world is progressively transformed and incorporated by an expanding scientific technology. In others the perception focuses upon the behaviour of large-scale technical systems that appear to operate and grow through a process of self-generation beyond human

> intervention. In others still, the matter is primarily that of individuals dwarfed by the complex apparatus surrounding them ...[18]

There are three themes in here, and we'll briefly consider each of them.

Talk of a general change in the nature of 'the human world' shows up in many places. Feenburg, for example, claims that 'the issue is not that machines have "taken over" but that in choosing to use them we make many unwitting cultural choices. Technology is not simply a means but has become an environment and a way of life ...'[19] The first part of the claim, choosing to use technology involves us in unwitting cultural choices, sounds familiar. It sounds like an enlarged version of something noticed in our consideration of neutrality: namely, technology sometimes brings with it more ends than those intended, and unintended ends sometimes figure into our evaluation of means. Certainly the autonomy view holds that technology has more effects than the ones we intend, but the view expands this simple claim into something much larger. The unintended effects are now part of a whole system, a thing with identifiable and in some sense self-perpetuating ends which lie beyond our control.

Probably this notion of technology as a system—which emerges in the second part of Feenburg's thesis, the claim that technology is an environment or way of life—falls out of Heidegger's interpretation of technology.[20] Heidegger's question concerning technology has something to do with our relationship to technology, in particular, our experience of being 'in the midst' of a life surrounded by or embedded in technology. He claims that the view of technology as nothing more than a means might be correct as far as it goes, but it points to a deeper understanding of the relationship between human beings and technology. We see technology as tools to be used and we see problems as admitting of technological solutions precisely because we are already embedded in something deeper and larger, something like a technological way of life.

Saying that we live a technological way of life is claiming that our problems, activities, agendas, and so on happen in a social world

[18] Langdon Winner, *Autonomous Technology*, (Boston: MIT Press, 1977), 17.

[19] Feenburg, 8.

[20] Martin Heidegger, 'The Question Concerning Technology', *Basic Writings*. (New York: Harper Collins, 1993), 331—41.

where everything is in some measure regarded as a standing-reserve, a stockpile of stuff to be used in the service of technological purposes. We, along with everything else around us, are nothing more than instrumentally useful, disposable human resources, in a way of life we never chose.

Winner's second expression of the autonomy view—the one which focuses on the behaviour of large-scale technical systems that appear to grow through a process of self-generation beyond human intervention—is taken literally or nearly literally by some thinkers. Technology is not just a force, but a creature with its own agenda. Ellul, perhaps the loudest spokesperson for the autonomy thesis, maintains that, 'An autonomous technology ...means that technology ultimately depends only on itself, it has its own route ...it must be regarded as an "organism" tending toward closure and self-determination: it is an end in itself.'[21]

Autonomy, for Ellul, consists partly in technology's detachment from things we might think regulate it. In fact, the sorts of things we might think are in charge of technology are actually beholden to it. Technology operates outside of morality and aims at self-perpetuation rather than improving human virtue. It is also not something researchers or users tend to judge from a moral point of view. Technology answers technological problems, not moral ones. Because technology seems to operate outside of morality, he argues that we never halt research or applications for moral reasons—instead, technological necessity drives implementation and use. This is not to say that technology is morally neutral, but instead the claim is something closer to the view that 'technologically good' replaces 'morally good'—what is good for the system overrides what is good for us.

Interestingly, the claim that technology is not just beyond moral considerations but that it is now an arbiter of moral problems is considered in this connection. Technology, Ellul suggests, is so powerful a force that moral problems get technological answers or, worse, some moral considerations are put to one side as technologically impractical. Similar considerations hold for economic, political and scientific constraints on technology. Technological demands drive everything. The thesis which emerges from Ellul's reflections is technological determinism, the view that changes in technology dictate or fix social and cultural changes.

[21] Jacques Ellul, (Joachim Neugroschel, trans.) 'Autonomy', *The Technological System*, (New York: Continuum Publishing, 1980), 125, but see his footnote one.

Winner's third view of autonomy—a conception of technology as a complex which dwarfs the individual—gets only occasional attention. Winner himself argues that there is a substantial gap 'between complex phenomena that are part of our everyday experience and the ability to make such phenomena intelligible and coherent.'[22] Expertise and know-how necessarily fragment, fall into the hands of a clutch of specialists in a technological society. No one understands even a fraction of the science underpinning even everyday objects, and it almost goes without saying that the interconnections between various objects and their social effects are generally beyond our ken. It can lead to a kind of vertigo. Worse, it can result in a general degradation of individual autonomy, which, some argue, is replaced by the autonomous activities of technology itself.

Cooper does not go so far, but he does identify three senses in which technology erodes the sphere of the person.[23] Self-reliance is diminished by technology, in so far as technical or expert fixes are sought, rather than individual reflection on a problem. Not only is there now a culture of expertise in which individuals defer to the opinions of experts, but in some sense this is a necessity, given the complexity of technology. Further, he argues that the integrity of our concept of personhood is under a kind of threat from the way in which technology reinforces distinctions between certain human capacities and elevates some above others. Instead of reason, intuition, emotion, wisdom and knowledge, we worry about acquiring and processing information. Finally, the aspect of self which Cooper characterises as a 'life-as-a-whole' requires a certain narrative structure undercut by the speed of technological advance. Our concept of self requires not just past memories, but forward planning, hopes for the future. Cooper argues that living in an age of rapid technological change undercuts the possibility of such plans. Our conception of ourselves requires slow plodding and is impaired by the speed of technological progress.

You have now heard something about the thesis or theses of autonomy, but what arguments are there for the view? As noticed a moment ago, what we have is something closer to a Gestalt shift than an argument. If there is an argument somewhere in here, it consists largely in the claim that a wide-angled shot of technology is the only way to see it properly and come to understand it. Recall

[22] Winner, 282.

[23] D. E. Cooper, 'Technology: Liberation or Enslavement?' in Fellows, 1995.

Kline's claim that technology is best thought of as sociotechnical systems of manufacture and use. His claim is that technology cannot be understood for the thing that it is without reference to the whole or at least large chunks of the society in which it is embedded, including the purposes and aims of human beings. Building all this in, he says, is 'essential to understanding the human implications of "technology" '.[24] If you want something more than a naïve and limited conception of technology, the autonomy theorist seems to argue, you need to have a look at the larger picture. Many thinkers in the neighbourhood take it that the broad view requires a conception of technology as a system or force with its own implications and agenda. Examples are used to nudge us towards the view, and considering some of them might help.

Winner argues that technology might be thought of as autonomous in at least two senses. First, 'some kinds of technology require their social environments to be structured in a particular way in much the same sense that an automobile requires wheels in order to move.'[25] His claim is, roughly, that some sorts of technology function best or maybe function only against the backdrop of some social or political arrangements and not others. Using a particular technology, then, can either reinforce or require a particular social setup. His example here is nuclear power facilities. Keeping such things safe and coordinating the complexity underpinning the production of nuclear power requires centralised control. If you want nuclear power, you need to have and then keep a particular political arrangement. He concludes that just having nuclear power facilities in a society involves that society in a measure of authoritarianism.

Second, he argues that the invention, design, and arrangement of a particular technical device or system settle issues in the affairs of a given community. His example here concerns the bridges around Jones Beach, and his conclusion is that they literally have an inbuilt political or social effects. Once implemented, the system is beyond the control of its users. It carries on doing what it does regardless of our desires or aims, and what it does is political. The bridges have politics.

The point of these and other examples which are used by autonomy theorists is that unless some version of the autonomy thesis is adopted, unless we opt for the bigger picture, we won't

[24] Kline, 217.

[25] Langdon Winner, *The Whale and the Reactor*, (Chicago: University of Chicago Press, 1986).

notice the larger social, political and moral implications of technology. You can take this point, but still wonder whether or not one or another version of the autonomy thesis is forced on us. Do we really have to see technology as a way of life, or an independent organism, or a complex of forces which somehow overwhelms the self in order to make sense of these sorts of examples?

The conclusion that technology is out of control, however you cash it out, can seem extravagant if all you have to go on are suggestive examples. I'll leave this question to you, because the point of considering the autonomy view, at present, is to determine whether or not it can help in thinking about the moral dimension of mundane technology. Suppose it's true that technology is beyond our control: what should we do about it? Is there any help here for someone worried about the moral use of everyday technology? Is there any good advice in the autonomy view?

We might look to Heidegger for advice about what to do if technology really is a system, a life world in which we are embedded. His suggestion seems to be that we should 'thoughtfully reflect' on the senses in which we are enveloped by technology, instead of further attempts to save ourselves with still more technological quick fixes. We can look to art, he seems to say, and build something like an aesthetic point of view into our relationship to the technological world. The suggestion is that we should think carefully about our world, perhaps think of the mountain as beautiful rather than as a possible source of coal. Very well, but you might be forgiven for thinking that we need a bit more to go on than this.

What about the view that technology is an autonomous creature or something like it? If you join Ellul in thinking that technology determines and drives more or less everything, it is hard to think of a way to snap ourselves free of it. Determinisms do not normally lend themselves to clear thinking about possible courses of action. Still, Ellul is careful to say that his analysis of technology and his conclusions about technological determinism leave open some sort of human freedom—human beings need not just float along with the technological tide. Ellul's purpose is, he says, 'to arouse the reader to an awareness of technological necessity and what it means. It is a call to the sleeper to awaken'.[26] He has, though, 'deliberately refrained from offering solutions'. The best advice he

[26] Jacques Ellul, (John Wilkinson, trans.) *The Technological Society*, (New York: Jonathan Cape, 1964), xxxiii ff.

has for us is that 'each of us, in his own life, must seek ways of resisting and transcending technological determinants'. Again, not much help.

Think again about the third version of the autonomy thesis, the claim that human agency is somehow swamped by technological complexity. There are some calls in this connection for a simple reduction of complexity, of insisting on small-scale technological solutions to problems, the so-called 'appropriate technology movement.' The trouble with this and other suggestions for a reduction in complexity is that we have no idea where to begin. Technology is already in place, and the complexity of technological systems is such that we have no real idea what scaling back or simplifying particular parts of the whole will do. Winner is alive to this worry, and suggests that we adopt Luddism as epistemology.

After offering a few general rules for the future implementation of technology, Winner suggests that we dismantle some technological systems, not as a solution to the troubles associated with the autonomy of technology, but as a method of inquiry. 'Prominent structures of apparatus, technique and organization would be, temporarily at least, disconnected and made unworkable in order to provide the opportunity to learn what they are doing for or to mankind'[27] Once we know what we are doing, or better, what technology is actually doing, we might use that knowledge to reconfigure the technological world, direct it more carefully towards more human ends. If this sort of thing is thought to be impracticable, Winner suggests that we experiment with a group of willing individuals, extract them from technological systems, and see what this tells us about the role of technology on social relationships. We might also, as a people, just choose not to repair technological systems when they happen to break down and examine the consequences.

I am not entirely sure that Winner is serious about any of this. Talking about Luddism as epistemology might be his round about way of pointing to probably the largest problem attending reflection on technological complexity: we do not really know enough about the effects of technology to make reasonable suggestions for improving the situation. If Winner is serious, then there is nothing here which counts as advice. We can only await the results of the experiments, and we might be waiting for some time.

So much for the autonomy view. We have reflected on versions of the autonomy thesis, considered the examples which go along with

[27] Winner, *Autonomous Technology*.

the recommendation that technology should be viewed as a system out of control, and looked for help with our question about mundane technology. In the end, even if you do go along with the autonomy thesis, the view isn't much help, doesn't offer much in the way of advice.

3. A Concluding Suggestion

Philosophers who take up questions associated with exciting technology usually have something to say about how it is best used, and typically there is a call for limiting its use or at least deferring the question of its use until wisdom catches up with science. You might think that demanding advice from the neutrality view and the autonomy view is misplaced, but if we get recommendations from nearby theorists, why not hope for a little practical help with regard to mundane technology? Can we tease anything out of our considerations of both views?

If, despite the dubious arguments, you go in for some version of the neutrality thesis, you end up with just one thing to think about: the ends towards which technology is directed. If you are persuaded that there is more to it than this, you might begin to go further by reflecting on the risks involved in using technology, engage in a bit of cost-benefit analysis. Technology generally, Grant for example notices, brings with it the risk of temporary unemployment, the depletion of resources, climate change and other unpleasant effects. A part of the autonomy theorists' objection to even this short step beyond simple neutrality is that reflection on just the ends in view and the risks is not enough. More consequences than just the intended ends are brought about by technological use, and the concept of risk is not meaty enough to capture those consequences. Thinking about risks also implies that we are in control of the situation, but of course the autonomy theorist denies this.[28] Must we be dragged off to the view that technology is autonomous if we want to think clearly about those extra consequences?

If you go in for some version of the autonomy thesis, you find no serious advice at all. The wide-angled view might capture the large scale social, political and moral implications of technology, but it takes the human perspective right out of our thinking. The

[28] Langdon Winner, *The Whale and the Reactor*, Chapter 8.

autonomy theorist might be forgiven for this. If technology really is beyond our control, then what advice could there possibly be?

There ought to be middle ground in here somewhere, some conception of technology which recognises that the stuff is more than just neutral but stops short of contending that technology is beyond our control. We might do better by thinking of technology as sometimes out of control, not beyond control, and do what we can to change the undesirable facts in our everyday lives. If what is needed is a more human perspective, you can look for one by turning Winner's possibly tongue-in-cheek advocacy of Luddism as epistemology into a real suggestion, something like personal Luddism.

Unplug your television for a week or two, go on holiday without your camera, consign your Ipod to a drawer, ignore your email, leave the phone off the hook for a while, and study the effects on your life. Perhaps you switched off your mobile phone for a bit of peace while reading this paper. You could leave it off for a while, or at least make sure you have a good reason for turning it on again. It might well be that reflection on your good reason when it comes, as well as reflection on reasons for leaving the thing off a little while longer, will lead to clear thinking about the moral status of mundane technology. You might find advice for yourself. This strategy can seem more fruitful than the further consideration of the theses of autonomy and neutrality.