Always Read The Label

Notes on Sociology, Ethics and Digital Technologies

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And every one that heareth these sayings of mine, and doeth them not, shall be likened unto a foolish man, which built his house upon the sand: And the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell: and great was the fall of it.

Matthew 7: 26-7

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PROLOGUE

Over the past 40 years or so, Sociology and the disciplines and professions concerned with digital technologies have enjoyed a somewhat complex relationship. If we set aside the burgeoning role and effects of such technologies in the practice of Sociology itself (and this story does deserve to be told) and admittedly at the risk of some simplification, broadly we can discern two broad streams. As technological innovations, digital technologies have been the object of much fascination and study. The approaches adopted and the interests taken have been drawn from the body of work associated with the social studies of science and technology. Separate but related to this stream has been a concern with the design, development, implementation and roll-out of products utilising digital technology. This latter interest has its origins in work such as Enid Mumford's ETHICS approach to participative design[1] as well as later ethnographic studies of the workplace such as those of Lucy Suchman and her colleagues. Fields such as Computer Support for Co-operative Work and Human Computer Interaction have both tried to incorporate sociological findings in design.

Whilst the studies *of* technology and the studies *for* design have intersected at many points, of late a new nexus seems to be emerging. This is around the ethical implications of the effects in our ordinary lives of digital technologies. Where the studies of technology identified the social forces which shape the ways digital technologies emerge and progress to product and the studies for design sought ways to improve the effectiveness of the product within the context of use, this new concern seeks to use findings of studies of technology to influence design itself. It seeks not just the practice of sociology as a complement to design but also the incorporation of sociologising in design. Because of their understanding of the social and ethical consequences of innovation, sociologists should be brought in as members of design teams in order to help designers avoid designing technologies which will have deleterious consequences.

In this paper, we consider this proposal. Whilst we understand what motivates it, we are less than convinced either that the case for it is made or that, if implemented, it would be viable. Neither of which, of course, should be taken to imply that we do not think digital technologies actually set us ethical conundrums. They clearly do. Our fear is that some of the approaches to these problems, and especially Disclosive Ethics, may create more problems than they solve. We will try to explain

[1] Enid Mumford's legacy appears to be largely lost to-day. Her work is very rarely referred to. This is a pity as her application of the Tavistock Institution's theorising of organisations did actually grapple with (and to some extent resolve) many of the problems which preoccupy contemporary debates.

why we have come to this view by considering the arguments of two major advocates of Disclosive Ethics, Philip Brey and Lucas Introna. Whilst there are many similarities between their positions, they differ in quite fundamental ways. Both are heavily dependent on arguments made in Langdon Winner's paper *Do Artefacts Have Politics?* and so we will consider that discussion in some depth too. But to begin with, we will set out some considerations with regard to the practice of sociological theory and research which we feel bear upon the whole debate. These considerations will provide the backdrop for our discussion of Winner, Brey and Introna.

A WORD TO THE WISE

Introduction

Digital technologies are now critical to our way of life. Not only are they to be found everywhere, they are in everything. Their ubiquity and pervasiveness was the characteristic which encouraged some to describe modern life as an information society (Castells 2001, Baudrillard 1995). With this dependence has come concern (van Den Hoven & Weckert 2008). Just what are these technologies being used for? And are such uses always ones which we are content to tolerate? These are important questions. Questions of what is right and wrong about the uses and applications of digital technologies are ones which we as a society must address. Moreover, as sociologists, we are pleased to see sociological findings and arguments valued enough to be drawn into these debates by philosophers and others who seek to resolve the dilemmas and conundrums they set us.

However, this use of Sociology has to be a careful one. Sociological accounts and research can appear disarmingly simple and straightforward to the unwary when beneath the surface all sorts of complications and difficulties lie. Such complications and difficulties make up *the culture* of Sociology, if you like; what is known about but rarely commented on in the hurly burly of practising the discipline.

Our purpose in this paper is to surface some of this culture so that those who want to call upon Sociology as part of the engagement with the ethical issues set by digital technologies, can do so confident they know just what they are relying upon: just what Sociology can and will give them, and what it will not. Our hope in doing this is that Cervantes' adage will once again prove sound : "Good wits jump; a word to the wise is enough".

The Unresolved Nature of Core Problems

Whilst it is true that there are many unresolved problems in the Natural and Mathematical Sciences, for the most part those who work in the respective fields know what it would take to resolve them. It is just that the theory has not been well enough developed, the experiment cannot be designed, or the data is not amenable to capture with the instruments we have at the moment. With the social sciences and Sociology is particular, the situation is quite different. Despite endless re-workings, we appear no closer to knowing just what would resolve a number of core problems to the satisfaction of all. From where we stand now, the problems look less unresolved than unresolvable.

Which problems do we have in mind? We will nominate just three, all of which bear in one way or another upon social and ethical implications of digital technologies.

1. Technological Determinism: Is the proposal that technological development is the prime mover in socio-economic change a viable position? Associated with this is another oft debated question. If technological determinism is not a defensible position, does that mean we must set aside Marx's account of the evolution of Capitalism as flawed because it is technological determinist?

   The positions on these two are myriad with much debating art going into teasing out highly nuanced distinctions which can be defended. So we find scholars such as G. A. Cohen (1979) staunchly claiming both that Marx *was* a technological determinist and that *there is nothing wrong with that*. Others such as Andrew Feenberg (2002) want to save Marx from his interpreters and, by judicious adjustment, construct a different Marxian and critical theory of technology development. Feenberg's account draws upon approaches to socio-economic change which posit a mutual interdependence between technology form and social structures and which, therefore, reject technological determinism.

   Despite all the discussion, we are no closer to a firm consensus on, first, whether technological determinism is a viable sociological account, and second whether Marx was a technological determinist.
2. The origins of Possessive Individualism. It is generally accepted that early modern society emerged first in late medieval England. It is here that the combination of legal, political, social and economic structures which transformed itself into modern society can first be discerned. This transformation is usually held to be from a peasant-based feudal society to a class-based capitalist society; a change labelled 'The Great Transition'. At the heart of this transition is the replacement of a value system which gave priority to collective and communal bonds by one which stressed the rights and obligations of the individual: in particular the rights of the individual to alienate, hold and dispose of property. Possessive Individualism characterises modernity (MacPherson 1962).

   The debate over the origins of this value system continues to-day. Are they to be found in radical religious views which culminated in Puritanism (e.g. Weber 1930)? Are they to be found in the forces driving the increased commercialisation of agriculture needed to feed a burgeoning population (e.g. Homans 1930)? Or, is it perhaps the case that, as Alan Macfarlane (1978) has argued, if a peasant society is to be characterised by the absence of Possessive Individualism, England never was a peasant society and so, at least in the leading case, we should stop talking of a major transition. As much historical evidence as is heaped up on one side of this multi-sided debate is matched by the evidence heaped up on other sides. Indeed, *the same* evidence often is offered to support diametrically opposed arguments.
3. Nature and Nurture: Although few to-day are prepared to argue that 'biology is destiny' (or its inverse), nonetheless the precise weighting to be given to inherited traits as compared to culturally learned behaviour in the explanation of particular domains of social life

> remains unresolved (Pinker 2004). Despite all the studies of educational attainment, criminal behaviour, attitudes to work , voting patterns, and so on, we are still no closer to saying how much of any of these patterns of behaviour can be accounted for by genetic and natural forces and how much by social and cultural ones.

What does all this mean? Well, apart from implying that simply for anyone to be able to claim literacy in the field, serious training in Sociology ought to include examination of the original classical as well as contemporary investigations of these issues, it means that in order to pursue their research, researchers have to take a position. One simply cannot make any headway if one is always stymied at the start by indecision over how to frame the research question. Obviously it is good for students and novice researchers to understand that there are many different ways the question can be taken, but to do any work, you have to take the question some particular way. This is not a deliberate denial of the debates, rather the practical requirement of doing practical work. So, very often it will appear from the way the research is framed and how the facts of the matter are presented that some debate, issue, bone of contention has been resolved. But this is usually simply a device for curtailing argument in order to get on with research. Things appear to be settled and agreed to be thus and so, when in reality the debate still rages. All that has happened is that the researcher concerned has simply made his or her own mind up and proceeded from there.

In Sociology, then, many, perhaps all, of the central and critical issues around which the discipline is gathered remain highly contested. However, rather than constantly engage in a relentless debate over fundamentals and starting points, researchers choose a position and then shape their work from that. As a consequence, the unwary, coming across sociological accounts of phenomena which catch their interest, need to be more than a little cautious with confident appearing assertions of fact and settled agreement.

The Point of Sociology

The second fundamental issue we want to highlight concerns what might be thought of as the point of Sociology. Of course, everyone says that their aim is to explain the nature of social life, but what is meant by that takes two very different forms. One the one hand, scholars seek to provide narratives laying out, or explicating, the *causal ordering* of pre-conditions and effects which lead to particular social forms and patterns of behaviour. The debates in socio-economic history on the Great Transition are a prototypical example of this, as are the various debates over patterns of educational attainment, voting patterns, relative social mobility and the like.

On the other hand, much of Sociology (and perhaps all of popular contemporary theory) seeks to explain *the meaning* or *significance* of such patterns and outcomes. Why are they important and what role do they play in the overall structure of society? Thus what is being explained are the

reasons why such patterns persist and what their relationships to other, often overdetermining, structures might be.

This difference is crucial for how evidence is marshalled and deployed. The approaches differ in fundamental ways though both see the deployment of evidence to be critical. Whereas the colligation of examples, conditions and effects can be thought of as loosely conforming to an inductive approach to explanation, the examination of the meaning of social patterns proceeds on a *post hoc, propter hoc* basis, with the analyst knowing in advance what the account of the phenomenon is to be. What is arrived at by this approach, then, is repetitive ***confirmation*** of an antecedent theoretical position rather than cumulative ***discovery*** of social patterns.

When considering and evaluating a proposition such as "artefacts have politics" (the central assertion in discussions of ethics and information technology), it is crucial to be clear first whether this statement is the summary of a discovery process or the reiteration of an antecedent position, and second what evidence is being used to support it and how. Sorting these matters out is, we will accept, sometimes extremely difficult, especially for those who are not necessarily *au fait* with the intricacies of sociological reasoning. A situation not helped when those concerned to elucidate the significance of a social practice talk as if they are describing its causes. This is precisely the case, we would argue, with those who want to draw on Critical Theory or "post-humanist" versions of Actor Network Theory to offer accounts of digital technologies (for example Hofkirchner (2007), Latour (2002)).

The Centrality of Leading Examples

Perhaps because so much Sociology is learned through absorption of textbook expositions rather than engagement with original studies, it has come to be the case that summaries of positions and arguments in the research literature depend upon a few, often only one or two and generally the same one or two, leading exemplars. Apart from the medieval English peasantry and its role in The Great transition (see above), one has only to think of the role of Shawnee linguistic forms in justifying the Sapir-Whorf hypothesis, or the stories told to Margaret Mead by Samoan adolescent girls in theories of the cultural relativity of adolescence.

Equally importantly, many times the claims made on behalf of the examples are made *as if* there can be no doubt that the research did demonstrate the case being made. But, as is brought out *par excellence* by Augustine Brannigan (2004), this may be mistaken. Often there are long standing, well understood and serious reservations in the research community about the findings;

reservations which mostly start from the fact that the evidence provided by the original example is not that conclusive.[2]

Finally, the lack of attention to original studies often means that the use of the arguments that these cases support resembles Chinese Whispers, to use Joerges (1999) phrase. Exemplary cases become enshrined in the literature without any calibration of what is being claimed now against what the original example seemed to show. As a consequence, all too often what we might think of as invocational drift takes place, with the original example and the current claim bearing only a distant resemblance to each other.

In short, it is wise to be careful when using what appear to be standard examples drawn from the sociological research literature, particularly if they have iconic status. All too often, the example will not bear close inspection, let alone the weight it is being asked to carry.

The Predominance of Functional Analysis

As with the rest of Sociology, the majority of sociological studies of science and technology are concerned to expose the significance of scientific and technological practice (e.g. Pickering 1995. Barnes & Edge 1982) In this context, exposing significance is usually taken to mean showing that things are not necessarily as they are described by those engaged in those pursuits. In particular, emphasis is often placed upon the importance of social interests and other factors in determining outcomes. So, for example, social forces are said to determine the evolution of scientific theory and the dynamics of technological innovation.

The argument used in such studies is *functional* in form. Functional arguments have some distinctive properties which it is as well to bear in mind. We will summarise just four.

1. It is *an axiom* of functional analysis that social institutions and practices will have functions. Whilst functional analysis does not prescribe precisely what those functions will be, no social institution exists without functional consequences. That some social practice or institutions has a set of functions cannot, therefore, be a finding, an outcome, of the analysis. Rather, the outcome is a description of the functional fit (and this may be positive or negative) of the consequences to the surrounding social environment. To repeat our earlier comment, functional analysis does not give us discoveries in the same sense as the natural sciences.

[2] See Lucy (1997) on Sapir-Whorf and Derek Freeman (1983) on Mead. We have already discussed the debates over the Great Transition.

2. For some set of circumstances or outcomes to be a functional consequence of a social practice, the circumstances must be *both logically and empirically distinct* from the practice. If there is no logical distinction then the practice and the consequences are identical. If there is no empirical distinction, there are no grounds on which to base a description of the evidence for how the practice gives rise to the consequence.
3. Evidence is central to the *plausibility structure* of both kinds of sociological account. Evidence which underpins the strength of a functional analysis demonstrates the degree of close coupling provided between the practice and the consequence on the one hand, and the consequence and overall system stability on the other. What makes a functional description convincing is, quite simply, the strength of the story that such evidence tells. This means that, unlike Achilles' view of Logic in Lewis Carroll's parable, a functional analysis cannot take you by the throat and force acceptance. No matter how convincing the description, there is always another way the story can be told, another narrative which can be played out, another interpretation constructed. This is, more or less, the central reason why sociological debates seem so non-convergent.
4. It is *an axiom* of functional analysis that all social systems strive for cohesion, integration and stability. Even in the face of deep structural and disintegrative forces, adaptive processes are at work. Key among these are shared systems of norms and values. The introduction of new social practices, for example the World Wide Web or the use of CCTV, may well bring changes in norms and values but these changes will take place in the context of overall stability.[3] Furthermore, as they become "institutionalised" or embedded as social practices, they too will contribute to overall adaption but under somewhat changed conditions which come about partly a consequence of themselves. In this way, changes in norms and values are, or can be, functional consequences of new social practices.

In many ways one could argue that Sociology's main contribution to the study of social life has been functional analysis. Certainly, anything passing for Grand Theory tends to be functional in form. What this means is that any research endeavour operating within a standard or classical theoretical tradition, even one that seeks to integrate whatever modish oppositions happen to be *au courant*, is likely to be offering evidence to support functional explanations. There is, of course, nothing wrong with this except in so far as the explanation does not made a clear distinction between its own operative procedure (namely rationalising back from outcomes) and that more usual in causal analysis. Making such a distinction is critical lest the former be taken for the latter and hence

[3] Thos who would want to argue that this is denied by Marxist Sociology might reflect on Marx's analysis of The German Ideology (Marx & Engels 1938) and Marcuse's (1964) notion of "repressive tolerance".

functional descriptions of how a social practice might be construed be taken for causal accounts of how things are. Such a misapprehension, or so we would argue, is central to some prominent discussions of the impact and importance of digital technologies.

Conclusion

Let us return to our original purpose. In setting out the considerations we have summarised above, we do not mean to belittle or disparage Sociology, especially to those who would like to use its findings to help understand the ethical implications of digital technologies. We believe sociological analysis should be insightful and could have lots to offer such debates. However, to repeat our introductory caveat: sociological investigations and their findings can look disarmingly straightforward when, in fact, they are not. It is, therefore, important to understand just what trailing clouds of open questions, analytic stipulations, and methodological pre-suppositions they come with. For if one does not, there is a serious chance that the Sociology taken up will be felt to be more secure and resilient than it actually is. In such cases, the resulting philosophical, ethical, professional and policy structures will in all probability be like the house of the foolish man — built on sand with all of the unhappy consequences that followed. In the rest of this paper, using leading discussions of the ethical implications of new technology, we illustrate just how this can happen.

THE GENERATION OF AN URBAN MYTH

Introduction

In debates over the ethical and political implications of new technologies, Langdon Winner's (1985) discussion of the bridges of New York and the evidence it is said to offer for the conclusion that artefacts have politics has an iconic status. The case he makes is taken to be a complete demonstration of the fact that artefacts do have politics. It functions almost as a totem in every subsequent discussions in that it is repeated or referenced without reflection.

However, we feel, that a number of serious questions should be asked before the argument Winner makes is accepted. These questions derive from the style of sociological analysis Winner relies on. Our aim is not to de-bunk Winner (well, not entirely!) but to raise issues which those who wish to use Sociology to aid careful consideration of the ethical, political and other value dimensions of technology, especially digital technologies, might like to reflect on. If the Winner case is not as secure as is usually thought, what does this imply for arguments about ethics and technology which are premised upon it?

To begin with, both as a way of ensuring a common base and to assist those who might not be so familiar with Winner's paper, we will summarise his key arguments.

The Politics of Artefacts

The objective which Winner sets himself is to find a path between accounts of technology which insist it is neutral with regard to the effects it has and accounts which insist, on the contrary, that such effects are determined by the social and economic environment within which any technological innovation is placed. The former want to say that it is how technology is used which gives it whatever political form it might have.[4] The latter want to say that, no matter how distinctive the technology is, its political form will reflect the dominant social forces.[5] In opposition to both these views, Winner wants to argue that the technologies do count: they do have effects because of the way *they are* and not simply because of the environment they are in. He identifies two types of "politics" which technologies can have. The first he calls "forms of order"; the second

[4] Although Winner identifies this as a commonly held position, he identifies no one with it. The only case we can find of anyone actually defending such instrumentalism is the attribution by Marshall Mcluhan of it to David Sarnoff (Mcluhan. 1964, p 2)

[5] This is by far the most common sociological position. See the other papers in Mackenzie & Wacjman (1985)

he calls "inherently political", by which he means they predispose certain patterns of power and authority.

The design of the New York bridges is of the first kind. According to Winner, Robert Moses who was responsible for the design of public works for New York at the time, deliberately set the height of bridges on the parkways that were being built so as to prohibit buses (the predominant form of transport for the low income, mainly black population) using them. This had the effect of preventing this section of the community from accessing the beaches of Long Island, and in particular, Jones Beach which was popular with the white middle classes. The social consequence of a particular technological solution was to reinforce class and ethnic discrimination and inequality.

For the second kind of politics, Winner suggests that choosing to develop and deploy certain kinds of technology is to choose a "a particular form of political life" (p 31). What he means by this is that the consequences are not specific outcomes but rather the tenor, form of authority and decision-making they require. The example he chooses is nuclear power but he believes the phenomenon is more general and perhaps even typical of advanced industrial nations, characterised as they are by large-scale institutions and organisational processes. The centralised decision making processes (usually described as 'command and control') which modern organisations display are, or so Winner wants us to accept, the antithesis of open democracy. It is not surprising, therefore, that the arrangements surrounding the deployment of nuclear power have been structured in this command and control form. To put it more crudely, but we feel not unfairly, for Winner, nuclear power is predisposed to authoritarianism. And, in the name of exigency, we can expect the erosion of civil liberties and other features of authoritarianism follow where the management of nuclear power is concerned.

The two types of political effects which Winner distinguishes are very different. As a consequence, we will take each in turn.

Technologies as Forms of Order

The central question is whether Winner's account of the New York bridges actually demonstrates that they are indeed political. Let us grant, for the moment, that Winner is right and that Robert Moses did deliberately fix the bridge height to prevent sections of the community accessing Jones beach and other parts of Long Island. That act of setting the bridge height with the intention of excluding certain groups is, clearly, 'political' in some recognisable sense. Moses wants to maintain some kind of social divisions. But how does that motivation on the part of Moses get transferred to the bridges? Since (we assume) no-one is going to argue that the bridges want to exclude certain groups from Long Island, all we can say is that Moses was using the bridges to achieve *his* ends. The ends, and let us agree, again for the moment, they are political, are Robert Moses' not the bridges'.

That might seem a blindingly obvious thing, but it implies that the bridges cannot be viewed as *political themselves*. The bridges are neither acting nor refraining from acting to achieve any ends. They are, at least as Winner tells the story, the instruments of Robert Moses' politics; a familiar enough tale told about technology. But, and this is the critical point, this account of technology is precisely one of the standard positions from which Winner wants to distinguish his own. As such, Winner's account fails to deliver his own objective and show that technology (the bridges) do have their own politics.

So much for Winner's objective. What about Robert Moses' objective? Does Winner show that, through the bridges, Moses succeeded in reinforcing segregation and social class? Or simply that such an outcome was his intention? In this respect, the bridges example is subtly different from the second example Winner cites in this part of his discussion, namely the introduction of a particular type of casting machine in the McCormick factories in Chicago. This was done as a deliberate and successful strategy to replace skilled and highly unionised labour force with unskilled and non-unionised one. There appears to be no question but that this strategy worked. After some time, unionised labour had disappeared from the McCormick work force. The union records are evidence that this happened. This is not surprising since all the enablers for it were within the control of the factory owners.

With the bridges, though, what evidence is there to show the strategy there worked? We might say that that it stands to reason that it would, but its standing to reason is not any kind of *evidence* that secures the case. The difference between the two examples turns on the scope and location of the consequence and the evidence for it. The machine tool case is limited to a factory and the composition of its labour force, for which evidence is relatively easy to obtain. The bridges case is a broad societal consequence affecting a large, perhaps the major part, of the population. No doubt the claim might have been secured had it been buttressed by studies of the use of the highway and beaches and the effects of the parkways as 'pinch points' in accessing Long Island. This would require comparison of the parkways as access routes against other access routes that remained available. It would also require comparison of the use the beaches by different communities and the likely reasons for it.

However, none of this is offered. Instead, what we are given is the suggestion that the designer of the bridges wanted them to have a particular social effect; in Winner's terms to operate as a form of order. But unless we are using the term 'political' as a way of judging artefacts independent of their effects, without an examination of their efficacy in achieving the intended outcome, this can hardly be said to be a demonstration that they are *political in their effects* and hence political at all. The most one can say, it seems, is that Winner alleges the bridges are the instruments of Robert Moses' political beliefs.

So, the argument that the bridges were political is, to say the least, weak. What about this suggestion that they were deliberately designed to have the effects which Winner attributes to them? In a detailed review of the whole example, Bernward Joerges (1999) offers a number of considerations well worth taking noting.

1. The whole story (Joerges calls it "a parable") depends upon two interviewees whom Winner quotes from Robert Caro's biography of Moses. No other corroborative evidence is cited or seems to exist. These interviewees *attribute* the discriminatory motive as their rationalisation of the designs that Moses authorised. Ultimately, the 'factuality' of Moses intending to use the bridges to reinforce segregation rests upon the surmises of these two people. These surmises are the only evidence offered.
2. As against these inferences, Joerges points out that the design of the parkways was part of a regional transport plan. They were to provide a rapid, free flowing access route to particular destinations. However, *they were not the only routes*. The supposed excluded groups could and did get to Long Island by other means. That they didn't go to Jones Beach, or didn't go in numbers, can quite easily be understood in terms of what we know about US society at that time. This was a society riven by social, especially ethnic, divisions. Why would such groups have wanted to go to places where they would not be welcomed and in all likelihood (very) actively discouraged from staying? It does not take much reflection or insight to light upon plenty of *contextual reasons* why the beaches of Long Island may have been used the way Winner suggests they were.
3. Moses may or may not have held much the same beliefs as his white middle class peers about race, class or anything else. In all probability he did, but we don't actually know. His beliefs only matter if the choice of bridge height can unequivocally be seen to have been motivated by political ends. Joerges produces (p.10) two quite straightforward reasons of his own for why the bridges are so low; reasons, he says, which have been suggested to him by US civil engineers. First, commercial traffic, therefore including buses, was prohibited from using the parkways. This was not a local policy but a national one. There was, therefore, no design requirement to raise the bridges to accommodate buses. Given the very good transport system in the region, the buses had alternative routes available to them and did not need to use the parkways. In addition, without a design requirement, the increased cost of building to a greater height would have been unjustifiable.
   In other words, there were simple project engineering reasons why the bridges are so low.
4. To the above, Joerges adds his own speculation. Moses had two lifelong pre-occupations; the need to accommodate the motor car within urban design; and the value of environmentally sensitive design. In prioritising motor car traffic, Moses was following the first. In keeping the bridges as low as possible in order to meld into the urban landscape, he was following the second. This might be a speculation of Joerges part, but it is no less a speculation than the opinions offered by the two interviewees Caro quotes and Winner takes as evidence for the discriminatory nature of the bridge design.

It would seem, then, all the components of Winner's argument that the bridges of New York have politics are less than secure. First, as told by Winner, the story of the bridges is actually one of their instrumental use by Moses rather than of their having their own politics. Second, there no evidence is provided that the design of the bridges did have politically divisive effects. The segregation of beaches on Long Island was much more likely to be the result of endemic cultural

and socio-political forces. Third, no evidence is offered to show they were actually designed to have such an outcome, and plenty of reasonable grounds for suggesting they would have been designed the way they were no matter who was responsible for them. In sum, the whole story is little more than an urban myth.

But what of Winner's other argument, namely that technologies are inherently political?

Inherently Political Technologies

In our view, with his second type of politics Winner might have inaugurated an empirical research programme. Moreover, we have no doubt that in some circumstances and for some forms of technology, his view would be vindicated. Once we have an array of studies which demonstrate that as particular technologies evolve within our society, their associated decision processes anneal into authoritarian modes, then we will have evidence that, at least *for those cases and under those circumstances*, technologies have politics. However, making this case cannot be done by starting from the presumption that all technologies must have a politics, finding rationalisations for why that claim can be sustained in particular cases, *and then* claiming this proves technologies have politics. And yet that is exactly how Winner proceeded with in the case of nuclear power.

What Winner is struggling with here, of course, is the wish to broaden the conception of the political, and hence the study of politics, beyond formal political institutions, but without at the same time fragmenting the sense of the political which we associate with those institutions. Within the formal institutions, we know what we mean when we say that every action and every feature "is political". Winner wants to take this understanding and attach it to things outside formal political processes. For social scientists, both formal politics and non-formal politics constitute "the political culture". Social science theory says that both are held together and glued to each other by the centripetal forces of dominant interests. The politics of technologies is just one aspect of this. Seen from this vantage point, Winner's view is all of a piece with standard functionalist descriptions of political life offered by sociologists as varied as Peter Worsley and Steven Lukes. Worsley (1973) points out that formal political activity is but a sub-set of the political activities in a society. Whenever we try to ensure others act in ways that make ends we value more likely, we act politically. These actions can be within formal governmental structures, formal and informal organisations (both of which constitute what Worsley calls Politics 2) or within the flow of ordinary personal interaction (what Worsley calls Politics 1). In like manner, Lukes (1974) wants broaden the conception of power, and therefore the exercise of power, to the variety of ways in which political agendas and values are implicitly prioritised and legitimated within society. This is what he calls "the third dimension" of power. Both are offering what are clearly *functional* views of politics utilising *post hoc propter hoc* arguments: views which assume there are political consequences to every aspects of our lives and, moreover, that such consequences serve to reinforce current forms of domination.

In sum, any innovation or novel social practice will be introduced into a context of institutions and practices, what we can call the local and global social structure. As it gains in popularity and use, it helps to re-shape and hence change this structure. To be successful, though, the innovation must both endorse and amend the extant value system. It is this which makes it political. But because this applies across the whole of social life, as Worsley says, everything is political. To say that technologies are political is to say no more than under some sociological description or interpretation, technologies play a role in the political culture.

Are Technologies Political?

What, then, are we to make of this famous assertion of Langdon Winner's that technologies have politics? We have seen that the first sense he attaches to this claim has a very shaky basis. The core example, the design of the bridges of New York's parkways is a tale that has grown in the telling and re-telling. As Bernward Joerges puts it, its current status owes more to the practice of Chinese Whispers in research referencing than anything else. In the second case, what we have is the replay of standard functionalist political sociology to demonstrate the adaptive processes of the political culture. In other words, if we take the assertion to be an empirical generalisation, either it is unsubstantiated (in the first case) or it is old hat (in the second).

Of course, it might be that that the assertion was never meant to be an empirical generalisation at all, but rather a call to arms. In his review, Joerges is clear that he thinks this really what is going on. In an interview with Joerges which he quotes (p 15), Winner states quite categorically:

> *I am not interested in theories, I am interested in moral issues. My point is not explanatory, it is about political choices.*

In other words, Winner's intent is to start a political argument about the place and power of technology in society and how that can be changed, not to provide a disinterested evidenced-based analysis of either the social causes and effects or functional consequences of technological innovation.

Of course, that being the case, the bridges of New York do turn out to have a politics, but this time they are Langdon Winner's politics not Robert Moses', let alone their own. The bridges have a place as a rhetorical device in the morality tale that Winner wants to convince us of. Winner wants us to believe that technologies have politics so that we will be more likely to support the case for change in the power relations surrounding them. In making the argument, he doesn't start with artefacts and find politics: he starts with politics and, after searching around for a clinching case, ends up with the artefacts he describes.

Why Does All This Matter?

First, of course, it matters to get the record straight. Whatever one might think of mid-20th century New York urban planning, it is important to ensure that those who were involved in it are not pilloried; or at least, not pilloried for the wrong reason. Second, it matters because Langdon Winner's paper and the New York bridges example, in particular, have such wide currency. It has become an article of faith that the story as re-told by Winner is a fair and accurate account of what went on. Each telling of the tale reaffirms this and thus stands as proof of the justification of Winner's assertion. Finally, and probably most importantly, the case has become the anchor bolt both for further studies and for the analyses based upon them. These analyses have led to calls for interventions within design processes both at the curricular and at the operational level. Such interventions are proposed to ensure that the case of the New York bridges could not be repeated. Political and moral philosophers, professional engineers and others have joined together to try to formulate programmes of study and professional practice precisely to ensure that, as far as is possible, artefacts can be shorn of their politics. But, if the case that all these arguments rely on, cannot be sustained, what then?

Langdon Winner has created a chimera out of the bridges of New York and, unsuspecting of its mythical status, many have set out to challenge it. In our view it is time we stopped pursuing this imaginary *bête noir* and began instead to think carefully, systematically and thoroughly about the social, political and ethical challenges which technological innovation actually does set us.

ARE GOOD INTENTIONS ENOUGH?

Introduction

Philip Brey (2000, 2010) believes we underestimate the effects of technology in general and information technology in particular. Computer systems and software have consequences which, by and large, we have failed to notice; consequences which are embedded in the technology and which carry important ethical implications. Along with other commentators, Brey suggests we need to adopt a combination of Value Sensitive Design and Disclosive Ethics. The use of this combined approach would, or at least so Brey argues, reveal commitments we are unaware of and perhaps avoid some of the more deleterious effects of information technology.

We can see no convincing analytic reasons why Brey's proposal is required and plenty of practical reasons why it wouldn't work. However, this and like views seem to be gaining currency within the research communities concerned with the human and social aspects of computing. Efforts are underway to promote them more broadly (Cummings 2006, Manders-Huit 2010). Although in some ways we find this popularity unsurprising — many colleagues engaged in research within the CHI and CSCW communities seem particularly drawn to what appear to be new and controversial ideas coming from the social sciences — it *is* a little puzzling. As far as we can tell, the analysis on which Disclosive Ethics rests is, in fact, a species of very conventional (not to say traditional) sociology. Moreover, the arguments for an ethics based on that analysis appear to be grounded in a common fallacy, one often associated with the adoption of social science findings by other disciplines. The possibility that a particular sociological description of some phenomenon can be provided is taken to mean that this is the sociological description which must be applied.[6] In Brey's case, this conviction is offered as basis for the need for Disclosive Ethics. The result is that we are left in the uncomfortable position of being asked to adopt a particular approach to ethical judgments simply because a sociological analysis intimates we should.

In this section we will set out why we have come to this conclusion. We will focus on Brey's (2010) extended account of his position and look first at the general analytic scheme for identifying what he calls "embedded consequences". We will mostly be concerned with its general character. We will then turn to the way Brey uses the scheme to demonstrate the ethical import of specific information technologies. In reviewing both aspects, we will attend to what might be thought of as "disciplinary issues". Having set these considerations out, we will move on to practical matters and

[6] If it were not so cruel, you might want to label this as a form of the naturalistic fallacy; one peculiar to cross border trading in the social sciences.

propose that, even if it were needed, given the social science research that has been carried out into commercial technology development, there are good reasons to suspect the proposal as Brey makes it will not work, or not in the way which he suggests it should.

Before we start, though, we want to make two important points. We are not here setting out to challenge or otherwise dispute the style of sociological analysis on which Brey relies. Posing questions of it should not be read as a subterfuge for arguing for some other form of Sociology. We simply ask: Will this sociology do what Brey wants? Second, we are not denying that some systems and software do indeed pose ethical challenges which we should all reflect on. As will become clear, we are less than convinced that such challenges should be said to be embedded in the technologies themselves.

Embedded Consequences

Brey wants to distinguish those cases where the use of a particular system or piece of technology may turn out to have ethical implications from those where those implications are embedded in the technology itself. Both are said to be consequences of the technology. For Brey, the use of geo-locational applications to stalk people for example, whilst definitely an ethical matter, is not an embedded consequence. The ethical challenge comes, rather, from the use of the technology by particular individuals. In his view, almost all discussion of the ethical challenges of information technology is of this kind. Debate on such issues is valuable and important, but not what he has his eye on.

Brey wants to focus on consequences which derive from the way the technology has been designed or from the way it plays in the network of infrastructure and correlated systems within which it is deployed. In this he follows Langdon Winner (1985) and proposes that such consequences may be intentionally or unintentionally built-in. He goes on to assert such consequences may be obvious and generally recognised or unrecognised and hence unacknowledged. These distinctions which form the core of his analysis, could be set out in a table such as the one below. Three of the four examples in the table are ours.

	Intended	Unintended
Recognised	Traffic Light Management	SMS & Texting
Unrecognised	Quality of Service	ATMs

To take each cell in turn. The software that manages traffic light systems uses allocation rules to produce orderly traffic flow. These might simply be constant or variable time allocation or, as is often the case with lights used when road works are in place, by relative volume of traffic as sensed by motion sensing cameras. An orderly flow is intended, and it is obvious when it is

produced. The case of SMS and texting is a little different. The Short Messaging System (SMS) was provided by mobile telephone companies to enable engineers to communicate with each other and for the companies, themselves, to be able to send messages to their customers. However, once the facility started to be used outside the engineering environment, it rapidly took off to become the mainstay of growth in mobile phone use. Whilst this was not what the engineers intended, the creation of a product and its market, "texting", was obvious.

Quality of Service management is necessary in any environment where demand can outstrip supply on a moment by moment basis. In managing access to broadband, for example, suppliers have introduced functionality which enables them to tune the access which individual users receive. This tuning can be on the value of the account, the type of application being used, or a number of other parameters. Only very occasionally will users experience the effects of such quality of service management, usually though the slowdown of delivery of video, for example, or the inability to access certain other bandwidth hungry applications. Quality of Service management allows broadband companies to conserve their resources and limit their investment in bandwidth. Thus, they manage their costs and increase their profits.

With ATMs (this example is Introna's & Whittaker's (2005)), the story is slightly different. ATMs are designed to be High Street located dispensers of cash. They are, therefore, designed for the mass of the population to use. However, because they are designed for the majority, they assume certain physical and psychological capacities: the ability to see and to read; the ability to manipulate a keyboard; the ability to understand pin numbers and remember them; and so on. When the deployment of ATMs coincides with the closure of High Street banks themselves, those who cannot operate ATMs lose ready access to cash. This combination of circumstances leads them to be discriminated against by the retail banking sector. Such discrimination, of course, violates the social value of equal treatment for all. For Brey, and here again he follows Winner, of all of the types of consequences, it is the unintended and unrecognised consequences and their correlated values which are the most important.

The first point we want to make is about the distinction between recognised and unrecognised unintended social consequences. For sociologists, this is a very familiar distinction. It is the fulcrum around which Robert Merton's (1949) classic paradigm for functional analysis turned. Merton termed the two kinds of consequences "manifest" and "latent" functions. The paradigm set out how, for any designated system of action (social institution, society, sub-culture, social practice), the consequences of courses of action could be shown to be either functional or dysfunctional; that is, they could either contribute to the adaptation of the encompassing system or to its disruption.

Tracing through the latent functional and dysfunctional consequences of social phenomena became the central motif of much sociological thinking and analysis.[7] Certainly, in one way or another, it underlies the sociology of science and technology[8] and as our sketches indicate could easily be applied to software and computer systems. As can be seen, the snippets we have given are functional in form.

Because his analytic structure is so clearly functionalist in form, it is open to a number of the considerations which we outlined earlier. In fact, Brey's framework displays most if not all of them. As a consequence, the grounding for the requirement to introduce Disclosive Ethics turns out to be extremely weak. In the rest of this section, we will outline why.

On Brey's account, the embeddedness of consequences in an artefact depends on the extent to which such an artefact can have autonomous effects and the relative specificity of its context of use. A bridge, for example has more autonomous consequences than a power drill because the drill depends upon an operator for its use.[9] Furthermore, because the bridge is fixed in its location and has a single purpose, very particular consequences can be said to be built into it. The traffic flows it allows determine certain outcomes.

The question to be asked here is just what we mean by saying something is built-into the bridge. Obviously there are the physical characteristics. These constitute the bridge; they are the bridge. Because it has a certain set of physical characteristics, it enables some kinds of traffic (private cars, say) to pass underneath. Let us allow, for the moment, the suggestion that because only some people own cars, the bridge can be said to discriminate against non-car owners. But do we want to say that this discrimination is built-into the bridge in precisely the same way that the physical features are? If so, isn't it part of the constitution of the bridge as well? If we want to say that this is so, that discrimination is part of the constitution of the bridge, then there is no logical distinction between the bridge and its consequences. The bridge does not have the consequence of its physical features. It is its physical features. Analogously, it cannot have the consequence of being discriminatory if the discrimination too is built-in. Having constituted the bridge as discriminatory, there is no logical space for us to open up *to show* the bridge to be discriminatory. When we discussed Winner's description of this very same example, we saw that his argument was evidentially weak. Brey has taken over this weak argument and further weakened it.

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[7] This is not the place to elaborate on the advantages and disadvantages of using terms like "perspective" to characterise different sociologies. Nonetheless, we would want to say that those perspectives which give primacy to the explanation of social structures and processes at the global level are all, inevitably, functional in form. (See the first paper in this series.)

[8] Given Merton's role on the development of the history and sociology of technology, Brey's failure to acknowledge the style of sociology his own analysis deploys is more than a little ironic.

[9] This is not a chance example. Bridges, it will be remembered, were at the core of Winner's argument.

Of course, saying that the discrimination is built in could really be just a way of reinforcing the dramatic tie between the bridge's physical characteristics and their social consequences. In this way it would be, so to speak, a rhetorical flourish which helps to add force to the story being told. Such a device might be necessary because the lack of close coupling between the elements in the story. With Winner, we go from physical characteristics to traffic flows to social demographics to discrimination without securing any of the steps on the way. Certainly no evidence is offered by Brey or Winner to show that the suggested consequences did actually come about.[10] Without the assertion that the social consequences are built-in, the functional account loses its plausibility. As a result, it can only be secured only by connections which have an "It stands to reason...." ring to them.

So, what are we left with? The argument that consequences are built-in to artefacts falls on two grounds. First, it collapses the logical distinction functional analysis requires between a social phenomenon and its consequence. This distinction is needed for a consequence to be a function of a social phenomenon. Second, the collapse of the analytic space compounds the failure to offer evidence that the consequence did indeed come about. Here, in adopting his example, Brey simply incorporates Winner's lacuna. Finally, given the weakness of the functional case, all that is left to support the contention is an appeal to intuition.

From Embedded Consequences to Embedded Values

We turn now to the way Brey moves from consequences to values. Brey begins by suggesting that values are often realised only in part. For example, the value "freedom" is only realised in full if everyone in the world is "completely free". Given the "constraints and limitations", as he calls them, which keep people from being "completely free", freedom is only realised "to a degree" (all quotations from p 46.) Because this conception of incompleteness is left totally unclear, Brey's use of it has all the hallmarks of what John Austin once called a “trouser-word” (Austin 1962). Its ambiguity and openness of scope have the effect of rendering the notion of its contrast, freedom, completely opaque. What are these constraints and limitations that limit us simply because we live in a social world? Limitations to do what, and where, and under what other circumstances? What would we be free to do but for the fact we live in a social world? What rights others have over us and what obligations we owe to others has been the central motif of ethical theory. Trying to make this determination has been a key debate in philosophical ethics (see for example Nagel 1991). Brey simply glides over the top of all this debate confident in the assumption that we can say *tout court* that values such as freedom are always realised only in part.

[10] To be fair, Winner does provide some sort of case. But, ironically, it is (a) not the case he actually wants to make and as we have said (b) very weak.

Having made this claim, Brey goes on to suggest that the partial realisation of a value and, therefore, its limitation, can be the consequence of a piece of technology. Where this occurs "systematically" (and again we get no help in understanding what that might mean), the realisation or limitation of the value can be taken to be an embedded consequence. In other words, in such circumstances the realisation of partial value outcomes can be the manifest or latent functions of technology.

There is a small but important point to be considered here. The consequences which Brey cites are all construed negatively. Presumably, though, embedded vales need not always be negative. Turning to the bridges of New York example again, had they been built 2 metres taller presumably the fact that they allowed a wider variety of traffic and hence a greater array of social groups to use the highway, would be regarded as a positive consequence. Improving integration would, we assume, be a positive value outcome. Or, to take another example: computer controlled milking parlours. This technology has significantly reduced the financial and administrative burden on farms, especially small farms, as well as allowing improved animal welfare. What otherwise would have been unprofitable or marginally profitable farms have been able to say in production. In turn, this has kept families in the countryside and so allowed schools and other services to be maintained. Where this has not happened, rural areas have been "cored out" and so lost their sense of community spirit. Milking parlour software, or so it might be argued, has had the consequence of modifying and preserving a way of life.

What are we to say now? The introduction of the milking systems, like the improved power of tractors, has reduced the need for farm labour and introduced mass production techniques into dairying. For many this can only be a bad thing. But it has kept farms running and this presumably is a good thing. How are we now to decide whether the identified embedded consequences sums positively or negatively? [11]

Our purpose in labouring the lack of clarity is to emphasise just how loose, and hence slippery, the steps in the analysis are. Neither firm conceptual connections nor strong empirical evidence are provided. But the analytic security of each step in the description is what gives functional analysis its plausibility. Brey simply waves his hands at how these connections are to be made. To try see just what could be meant by the suggestion that technology can have value outcomes, we will look at an example which Brey cites, where a clear set of ethical outcomes generated by a specific technology is said to have been demonstrated. The case is that of web search engines as described

[11] There is yet another irony here. If, as many want to do, if you turn to Heidegger for guidance on how to make these determinations, you are likely to end in an impasse. Heidegger's (1977) rejection of the "enframing" character of modern technology reaches its apotheosis in computer-controlled mass production. At the same time, that rejection is rooted in prioritising the (agricultural) community and its way of life.

by Introna and Nissenbaum (2000). This example has another useful feature for us. Like Winner's bridges, it has become totemic in the literature.

The web, as we all know, is gargantuan. The task for search engines such as Google is to reduce the search space of web pages to manageable proportions. This is done by a combination of page indexing and page ranking. The ranking of indexed pages enables them to be presented to the searcher according to some order of relevance. The search engine, then, reduces the number of pages to be sorted and then sorts them by relevance criteria. At its core, the algorithm Google uses defines relevance in terms of importance with the number of pages linked to a particular page being taken as a proxy measure of importance. Once a page has been defined as important those pages linked to it both derive importance from it and serve to bolster its importance (a kind of increasing marginal return to page rank power). Thus, what emerges is a highly configured landscape with a (relatively) few high ranked pages and a (relatively) large number of low ranked ones.

The key term here is "at its core". In addition to this page link criterion, Google uses other criteria which, or so it holds, underpin its competitive advantage. For this reason, it will not divulge them. These other criteria working together with page linking and ranking enable Google to provide the service it does and hence attract the users it does. In turn, this allows it to charge a premium for advertising and other services. In business-speak, the search algorithm is the heart of Google's business model.

How do matters of ethics enter all this? Well actually for Introna and Nissenbaum, they don't. Following Winner's lead, they want to talk about the politics of technology not its ethics. This is not a trivial point. The relationships between certain orders of valued ends (e.g. freedom, to use Brey's example once again) and certain political means (for example, representative democracy) have long been the subject of "moral" debate. That the practice of politics is entangled with the advocacy of values is undeniable. What is very deniable is that there is a clear and well understood way of demarcating them. In citing the search engine example, Brey provides no indication of how to translate Introna and Nissenbaum's "politics" into his "ethics", unless we are to assume that all politics *is* ethics.[12]

Introna and Nissenbaum believe the internet and the web are likely to follow the same development path as the mass media and commercial broadcasting. Relying on McChesney's (1997) review of the media, they propose a scenario where commercial interests could become "woven in to the very fiber" (p169) of the internet. If this happens, what was a public good will have been

[12] This assumption, though easy to make, would be difficult to sustain. See Nagel (1991) and Taylor (1995)

suborned by vested, private interests. Further, since, they assert, web search engines have biases built-into them, we can already see the beginnings of this happening.[13]

It is Google's refusal to publish its algorithm in full which is central here. Introna and Nissenbaum accept that search engines must operate in much the way Google's does. However, how they work should be transparent to the user. At present, any user of Google cannot know how the search space has been configured nor how the relevant results have been compiled. As a consequence, users cannot tell if anything *they might have felt to be important* has been left out or lowly weighted. The withholding of information about the weighting algorithm reduces transparency and so is a deliberate, political act. Lack of transparency sets the reciprocal challenge to the writers of web pages. They cannot know how to get their pages weighted highly by Google. Although there are rules of thumb for the design of web pages, where to put important information, how to tag, and so on, everyone who is designing a web page is, in fact, second guessing the algorithm.

Introna and Nissenbaum recognise that there are many different search engines. 'Why should we be worried about "bias" if we have choice?', one might ask. Won't a market for information access emerge which will provide everyone with what they need? For Introna and Nissenbaum, the acceptance of the web as a market (or market of markets) is just as bad as accepting the bias of search engines. To operate efficiently and effectively, markets have requirements for free flow of information that are not and will not be provided by the web.[14] And anyway, are markets the right way to distribute access to a public good? Should not public goods (access to full information) be open and available to all?

The combination of a lack of transparency and the use of market mechanisms to provide access to a public good is what, in the end, makes web search engines political. This political character is achieved at the cost of a partial realisation of a value namely freedom (to access information). Without transparency, we cannot know if the algorithms used by Google and others are sacrificing the interests of the majority in retaining open access to information to the commercial interests of a minority. And, whilst we cannot know this, given the history of broadcasting and the mass media we ought to assume not only that it is happening but that the process will accelerate. As this happens, or so the thinking goes, what had been an innovation shaped as a public good to provide open and democratic information access to all will be controlled by sets of vested interests. It will, in fact, be anti-democratic. Anti-democratic social institutions are, or so it is implied, unethical.

[13] We have already discussed this use of "built-in". Its use has become the leading term in discussions of technology and ethics.

[14] This is an interesting failure to distinguish the presuppositions of an (or *the*) pure economic model of free markets with the conditions within actual markets. Even economists don't think that real markets are like pure markets in all respects (Kuorikoski, Lehtinen & Machionni 2010).

A number of points should be noticed here. First, the analysis slides around between the various types of consequence used by Brey. Because Google won't publicise all the criteria and how they are weighted, we cannot know if the algorithm is deliberately directed for commercial reasons to select certain pages and not others. Although, given the commercial environment that Google operates in, Introna and Nissenbaum suggest we would be wise *to suspect* that it is. Such deliberate intervention in the operation of the algorithm would be of the same instrumental type as Langdon Winner ends up describing for the bridges of New York but is, of course, not the kind of *unrecognised* consequence that Brey is hunting down. Such an intervention would be a deliberate attempt to create a certain moral order. Moreover, as with the Winner example, whilst demonstrating the efficacy of the functional connection might not be straightforward, in principle it should be possible to provide evidence of its occurrence and efficacy. This evidence would then secure the steps from social practice to consequence. However, Introna and Nussembaum do not even produce the most minimal evidence to support their claim. They show neither that the "bias" (as they call it) is present and intended nor that it actually does serve dominant commercial interests. What earlier we called Winner's lacuna, is repeated here too. Without such evidence, the claim is no more than vague hypothesis (at best) or an allegation (at worst).

The second point concerns materiality. Even if the technology was biased and did work in the way claimed, would that matter? Or rather, would it matter for us, *the users of Google*? After all, if Google allows us to harvest relevant and useful information from the universe of web pages, does it matter to most of us most of the time that some particular pages are not selected? If Google does what we want it to do, is it material that the results might be marginally effected by commercial considerations? As users, we, and we suspect others, would think not.

It might matter, of course, if the world wide web and other services provided by the internet were public goods. But are they? We can see that the original DARPAnet could be said to be a public good, provided as it was from Governmental funds. As presumably was the original DNS service. Equally, the hypertext protocol could be said to be a public good released by Berners-Lee and CERN for the public benefit. However, we find it hard to see the web of published documents itself as a public good, provided and funded as it is by a wide variety of individuals, groups and organisations. Search engines were one of the first services to be provided for that web of documents. In many ways the old metaphor of an information superhighway probably remains the best way of thinking about all this, with the internet infrastructure a public good, like the road system, around which anyone can set themselves up as a site. The parallel then becomes between search engines and wayfinding services such as maps and navigation systems. N0-0ne thinks these are public goods. Moreover, they can be at vastly different scales and for very different purposes. No one supposes that there should be a single integrated map which showed everything (what on earth could that be?).

It seems, then, that both sides of the Introna and Nissenbaum argument fail. The arguments about the politics of a lack of transparency turn out to be assertions with no evidential base. Those about the suborning of a public good are, at best, muddled. All we are left with, then, is a commonplace but weak analysis of possible latent functions to act as a bridge from consequences to values

In the end, then, we are no further on in securing the move we need. Neither Brey nor Introna and Nissenbaum actually make the case for the embedding of values as latent functions in information technology. Yet, without accomplishing this, the need for a Disclosive Ethics is left hanging in mid air. Of course, such an ethics might be a good thing to have and highly necessary. But the arguments considered so far don't seem to give us reassurance on either count.

Disclosive Ethics

If we were to need a Disclosive Ethics, what would that be? For Brey, the thing to underscore is that the consequences of technology are often unrecognised. He calls such consequences "morally opaque" (p51). Consequently, the task of a Disclosive Ethics is as follows:

> *Many computer-related practices that are morally opaque are so because they depend on operations of computer systems that are value-laden without it being known. Many morally opaque practices, though not all, are the result of undisclosed embedded values and norms in computer technology. A large part of the work in disclosive computer ethics, therefore, focuses on the identification and moral evaluation of such embedded values.(pp 51-2)*

This will be done, he suggests, by looking first at how some system jibes with a given ethical principal such as the preservation of privacy. Next, as and when the introduction of the technology coincides with apparent changes in values, tensions between ethical principles and the priority ordering among them are taken up. Finally, at what he calls the application level, the outcomes of the previous two levels of reflection are applied to technical decisions. Furthermore,

> *Disclosive Ethics should not just be multi-level, ideally it should also be a multi-disciplinary endeavour, involving ethicists, computer scientists and social scientists. The disclosure level, particularly, is best approached in a multi-disciplinary fashion because research at this level often requires considerable knowledge of the technological aspects of the system or practice that is studied and may also require expertise in social science for the analysis of the way in which the functioning of systems is dependent on human actions, rules and institutions. Ideally, research at the disclosure level, and perhaps also at the application level, is best approached as a cooperative venture between computer scientists, social scientists and*

> *philosophers. If this cannot be attained, it should at least be carried out by researchers with an adequate interdisciplinary background. (P.53)*

This raises a host of issues, some of which are disciplinary and some not. We'll start with two disciplinary ones.

Disclosive Ethics is required because of the moral opacity of systems. We ordinary citizens cannot tell if they are discriminatory, biased, anti-democratic or whatever. The sociological analysis will tell us which is what and why. But the logic of moral terms, including second order moral terms such as these, (which is what ethics is about, after all) cannot be fixed by reference to some set of descriptions of how things are. If that were possible, ethics would be a lot less challenging and seemingly intractable than it is. Calling a set of software discriminatory, biased or whatever is not a morally neutral depiction, but rather an account of how they are to be viewed. Because there can be no recourse to "the facts" outside of the description given, moral judgements cannot be secured by those judgements alone. We have to consider the details of particular cases and instances. Not every selective process is discriminatory or biased. And a system which, on some occasions is, indeed, biased, may not be on others. It is all very well to say that Disclosive Ethics will provide this critical reflection. But how good will this reflection be if the value determination is already made?

This worry relates to a second concern. We think it was best summarised by R.M Hare (1986) as follows, though he was considering slavery.

> *Nearly everybody would agree that slavery is wrong; and I can say this perhaps with greater feeling than most, having in a manner of speaking been a slave. However, there are dangers in taking for granted that something is wrong; for we may then assume that it is obvious that it is wrong and indeed obvious why it is wrong; and this leads to a prevalence of very bad arguments with quite silly conclusions, all based on the so-called absolute value of human freedom. If we could see more clearly what is valuable about freedom, and why it is valuable, then we might be protected against the rhetoric of those who, the moment anything happens which is disadvantageous or distasteful to them, start complaining loudly about some supposed infringement of their liberty, without telling us why it is wrong that they should be prevented from doing what they should like to do. It may well be wrong in such cases; but until we have some way of judging when it is and when it is not, we shall be at the mercy of every kind of demagogy. (p. 165)*

Mutatis mutandis the same holds for Disclosive Ethics. Until those who hold that software systems violate their rights to free access to knowledge (or are discriminatory, or invasive, or whatever) can demonstrate, first, that the systems have they effects they claim and second tell us why it is wrong that they do so, we will, as Hare says, be at the mercy of any demagogue who opposes technological innovation.

Third, there is Brey's overly sanguine view of the state of the disciplines of Ethics and Sociology. Wittgenstein once described Philosophy as a "motley". Had he been talking about Ethics, he might well have called it a "mêlée". Nothing is settled. Almost every position on any topic is under siege from some other position. There are certainly no agreed approaches which can be used to determine the moral value of consequences and actions. Utilitarianism vies with Deontology whilst Virtue Ethics has recently gone through a renaissance. Moreover, there are even highly charged debates over what the proper basis and scope of ethics should be.[15] How is all of this to be reduced to clear maxims and rules of thumb for use by engineers and designers without resorting to a vacuous and principle-free pick 'n' mix approach?

Add to this the general condition of Sociology with its unresolved debates, non-converging arguments and the fact that any functional analysis of some institution or social practice can be countered by an alternative equally functional account, often with diametrically opposed conclusions. Ethics and Sociology are not pacific fields of endeavour. Dispute even on the most fundamental concepts is endemic. Erasing or short circuiting these debates to try to provide the kind of advice which designers and engineers will see as useful and would value is, as we well know, rightly only going to be dismissed by sociological (and philosophical) colleagues as trivialising, or worse.

Getting down to the practicalities

We finish with some practical concerns. The first relates to how real life commercial software (and other) projects is lived.[16] Over riding everything else is the fact that there is never enough resource to implement the signed off specification document *in toto* against the deadlines set. Some things have to go simply to stay on track. In addition, the schedules of technology development are unremittingly wicked. From the start, no-one expects to adhere to all of them. Delays are endemic and overruns normal. Yet some deadlines cannot be moved and so the project must be squeezed down to fit the available resource (time, money, manpower) to get it 'out the door' when it was

[15] See Putnam (2004), MacIntyre (1990)

[16] These observations draw upon our own and others' fieldwork in commercial software and development environments (e,g. Sharrock & Anderson 1996, Button & Sharrock 1994, Rooksby et al 2009)

committed for. And then there is the value engineering. Project costs never undershoot estimates and so the cost component of the eventual price has to be engineered down.

Into this fraught environment, Brey is proposing to introduce sets of professionals who, as we have continually suggested, are trained not to pursue convergent thinking; whose disciplines are in an open-loop, open-argument state. For project delivery, decisions need to be made and secured; designs have to be agreed and frozen. Specification and decision drift are *the* banes of the project manager. As a consequence, in our view, the average software project is the last place to conduct open-ended non-converging philosophical and sociological discussions about the significance, likely consequences, and ethics of design; and software project teams are the least likely people to stand for them.

The suggestion they should join such teams, of course, assumes sociologists, by dint of their sociologising, can foresee the likely consequences of some innovation. In fact, of course, they cannot; or at least no better than anyone else can. What Sociology provides them with is a template, a structure, for relating consequences to institutional practices once those consequences are to hand. Engineers and designers might be as well turning to crystal balls or Tarot cards get the answers they need as they would to hiring sociologists.

If you can imagine it, there is even worse. We were part of the effort which opened up the promise of ethnographic fieldwork for software development. We still believe that it has a lot to offer. However, in the intervening years, we have watched as more and more of what can only be regarded as old fashioned customer relationship management has masqueraded as ethnography. As the consultants have moved in, so the canons of fieldwork rigour have been eroded. Now, it seems, any kind of conversation with any kind of user/manager/customer can be called ethnography. The net result is a Gresham's law for research where good ethnographic work is being driven from the technology development environment. In our view, there is little doubt that if Brey were to be successful and persuade software managers to employ sociologists and philosophers to undertake the assessment of Disclosive Ethics on project teams, the consultant companies will be very fast second movers. Inevitably, as untrained and unskilled people start to ply their trade, the same dispiriting descent into banality will occur.

Conclusion

Philip Brey is motivated by good intentions. He wants to make sure that during the design process sufficient attention is paid to ensure that the chances of ethical breaches in the use of information technology are minimised. This is very laudable. However, the approach he takes is unconvincing in three major ways. It utilises a form of sociological analysis which was not designed to provide accounts of the kind he needs for ethical analysis. Second, he offers no clear way of reasoning from the accounts it does give to judgements concerning ethical outcomes. Third, if, as Brey intends it

should, his approach were to be introduced into the development environment, it is likely to be either disregarded or damaging. Disclosive Ethics offers no panacea for the ethical challenges of information and other new technologies. Mandating it as part of the design process will only cause more problems than it can hope to solve.

POLITICS, ETHICS AND METAPHYSICS

Introduction

The idea that the means of generating economic value serves particular social interests is an old one. Whilst its most familiar formulation might be in Marx and Englel's famous apothegm about the hand mill and the steam mill, the proposal can already be seen in the political beliefs of Gerard Winstanley and the Diggers and probably has its roots in the medieval radicalism of both Britain and Europe. More recently, it has been a constant theme in almost all accounts of the development of modern technologies. It is not surprising, then, that as we have moved from breathless hyperbole about an imminent "information society" (Castells 2010) to more measured accounts of the role and consequences of information and communication technologies in contemporary society, the argument has been pressed there too. A key contribution to this discussion was Langdon Winner's (1985) discussion of the "politics of artefacts". Whilst Winner was not discussing information technologies, nor indeed technologies which could be said to be the prime means of generating economic value, nonetheless his arguments have become the bedrock on which on which most discussions of modern technology, especially information technology, are built. Having swallowed Winner's argument, such discussions go on in an unreflecting way under the assumption that all that is needed is yet more demonstration of its importance and further description of how political consequences manifest themselves.

We are not convinced that Winner's case actually is made. We see it more as a tract than an analysis, its aim being to raise an issue rather than demonstrate an argument. As a consequence, we find ourselves out of tune with proposals that take its descriptions as their departure point, believing as we do that it stretches its claims beyond the evidence that supports them. What Winner does not do, and despite all that has been said about his paper perhaps he never intended to do, is provide *the* conclusive demonstration at all technologies are inherently political. However, because this is what he has been taken to have accomplished, unintentionally or not, Winner has acted as a Pied Piper within the social studies of science and technology. Researcher after researcher has set off to follow where they thought Winner was leading, only to end up in some very strange places indeed.

In this section, we will take all this up in relation to the work of Lucas Introna.[17] We will show how, because of his reliance on Winner and the weaknesses of the approach he uses, he has to resort to 'empirical stretch' to secure his conclusions. We will then turn to the discussion of how the implication of Introna's analysis should be taken up by software engineering. Here we will be concerned mainly with the cogency of arguments made by Bruno Latour since they provide the rationale for Introna's suggestions.

The Politics of CCTV

Even without the recent revelations with regard to CCTV in central Birmingham, knowing what we do about the agencies which use face recognition technologies in public places, we are likely to be more than a little sympathetic to the allegation that they could be politically biased. Study after study has shown the widespread use of stereotypes in policing and security matters. However, this is not the argument presented by Introna and Wood (2004). Rather, just as Introna claims in his related study (Introna and Nissenbaum 2000) of search engines, the suggestion is, first, that the operation of the relevant algorithms are not open to scrutiny, and second, the technology is a 'silent' one. We do not even know when our images are being captured and processed. Because we don't know if it is happening, and even if we did the process is inherently unscrutinisable, there is the possibility of bias and hence what is termed "micro politics".

Following the line of argument set out in the earlier study of search engines, the need for scrutiny is held to come from the requirement to reduce the information space before comparisons of face patterns can be made. Digital CCTV images are huge. Megapixel colour cameras are now widely deployed. Given the way colour is represented in image processing, this means each CCTV image could be as large as 8 million bits. The face recognition software is trying to identify a face pattern within those 8 million bits in real time and then to compare it to a database of stored images or templates. Introna and Wood report that for speed of analysis and comparison, the face pattern may be encoded in as little as 84 bytes. The information reduction and determination of the array of pixels which constitutes a 'face' is done by complex statistical analysis. Based on these procedures, patterns within the image can be associated with patterns in the database. Once identified, the 'face' can be compared to the relevant database.

Information reduction combined with other features of the process lead to what Introna and Wood call "bias" in the system. Such bias leads to 'micro-political' consequences. First, the algorithmic processes *are* statistical and therefore some level of (randomised) error is to be expected. Second,

[17] The papers we will concentrate on are Introna and Wood (2004) and Introna (2007). Other similar and closely related examples are Introna & Whittaker (2005) and Introna and Nissenbaum (2000)

the comparison to the images in the database is only as robust as the robustness of the images there. Lack of representativeness in the sample population or poor quality comparator images will all affect the robustness of the association. The possible implication of these is summarised by Introna and Wood as follows:

> *To conclude this discussion we can imagine a very plausible scenario where we have a large database, less than ideal image due to factors such as variable illumination, outdoor conditions, poor camera angle, etc, and the probe image is relatively old, a year or two. Under these conditions the probability to be recognized is very low, unless one sets the false accept rate to a much higher level, which means than there is a risk that a high number of individual may be subjected to scrutiny for the sake of a few potential identifications. What will be the implications of this for practice? (P189).*

Such implications are defined as unanticipated and unacknowledged consequences following from possible combinations of circumstances: the suppliers may oversell the robustness of the technology; the operators may not understand the system's limitations; the socio-political environment may encourage a tendency to accept false positives, and so on.

> *One might imagine that in an environment where there is an acute sense of vulnerability it would not be unreasonable to store these false positives in a database 'just in case'. These false positive may then become targets for further scrutiny. Why? Just because they have features that make them more distinctive. We are not saying that this will happen. We are merely trying to indicate how seemingly trivial 'technical issues' can add up to political ideologies at the expense of some for the sake of others.(193)*

Before we move on to consider where, on the basis of this case, Introna wants to take the argument, we ought to make a couple of points. First, it is clear that no-one is saying that the bias of these systems is the result of what elsewhere has been called 'institutionalised racism' or the like. It is not the effect on the use of the technology of a cultural milieu that Intona and Wood are describing. It is, rather, the effect of the technology given that cultural milieu which is micro-political. This is, of course, directly in line with the argument Winner.

Second, the "silentness" of the technology is of vital import. However, for ethical evaluation, the relative harm that derives from this silentness has to be calibrated against the perceived level of harm from the actions the technology is designed to prevent. We can, indeed, imagine circumstances where such capture would certainly be felt to be unnecessarily invasive. However, we can equally well imagine cases where it would be accepted as proportionate, pre-emptive

action. Yet again, it all depends on the circumstances. That the technology is silent is not, by itself, either politically or ethically significant.

Third, we can always imagine, as Introna and Wood do, scenarios where over-zealous selling, poor professional practice, and so on lead to misuse of the technology. But imagining scenarios is not describing actual instances and gathering evidence of actual cases. Once again, as with Winner, the lack of evidence from actual technologies in actual circumstances that the consequences were being realised, means all we are left is little more than scaremongering.

It is our contention that Introna and Wood end up in this position because they have taken Winner's account to be both a factual and generalisable description rather than either a political argument or the sketching of a potential research programme. For them, Winner describes not just what will happen but what must inevitably happen. Consequently, Introna and Wood see their task to be the teasing apart of the processes by which what is termed an "unauthored strategy" (or more familiarly a "hidden hand") works to achieve this general outcome. This unauthored strategy serves to ensure that than technological innovation will fit and reinforce the existing dominant socio-political and moral order. Through its micro-political enmeshing with existing institutionalised norms, values and practices, technology has the latent moral and political function of reinforcing the *status quo*. This enmeshing provides information technology with its significance. Information technology is now shaping how we experience the world. It is to the analysis of significance rather than the causal description of effects to which this whole approach is given over. The finding that technologies have politics is only important because of the significance which can then be given to them.

The Significance of Information Technology

For Introna (2007), information technology has the critical role in modern society. There is a duality to this. As a technology, it has become the pre-eminent source of images, metaphors and ways of thinking which re-affirm what Charles Taylor calls the "social imaginary" of modern life (Taylor 2004). This imaginary is instrumental rationality or what Ellul (1964) called "technique. Indeed, by and large, rationality is defined only in means/end terms. The instrumental outlook, what Borgman (2008) terms "the device paradigm" moulds — or "enframes" to use the Heideggerian expression — the way we think. The second aspect comes from the pervasiveness of this technology. Unlike, say, the internal combustion engine or electric power, information technology is not just to be found everywhere; it is in everything. It is all pervading. It is shaping our experience and thus our conception of who and what we are. To paraphrase Orwell: all technologies determine our social imaginary, but information technology is more determining that others.

Introna starts from Latour's (2002) assertion that instrumental rationalism is predicated on the separation of means from ends. In its view, technologies are seen only as means and often

described in tool-like terms. As tools they are morally and politically neutral. It is those that design, build, deploy and use technologies who make them a means for good or harm. However, because of their significance for the shaping of our ways of thinking about and experiencing the world around us, such technologies must be drawn into moral discourse. This will only be possible if the disjuncture between neutral means and valued ends can be overcome. To do this, Introna invokes Latour's ontology of "folding" as the means by which this can be done.

For Latour, the classic binary distinctions which underpin modernism (fact v value; subject v object; representation v reality, and so on) are all suspect. They are based upon a metaphysics which, first, divides the word into human and non-human entities; and second, prioritises the former over the latter. This metaphysics permeates our imaginary and forces us to think that there can be no logical bridge between the two categories. However, from his studies of science and technology, Latour wants to argue that such binaries are unsustainable. Facts are enmeshed in values; representations are all the reality we have. Moreover, the ontology of subject and object blinds us to the moral agency that objects (especially technologies) can have.[18] Objects, tools, technologies are not just used in ways that have moral consequences, they are immersed in and constitutive of moral choices. Studies from as varied cases as nuclear power, electric cars, the development of vaccines, and many more have shown that science and technology develop within and as part of a moral order. To overcome our blindness to this, Latour proposes we should adopt a unified ontology of mutual relationships. Material culture including technology is not over against human social life but deeply entangled in and with it. Folded withIn these entanglements are time, space and human socio-cultural history. They are rolled up in them, you might say, as are the higher order dimensions of String Theory. It is because of these foldings, these hidden but surveyable dimensions, that the duality of subjectivity and objectivity fails as the basis of ontology and so as the buttress for the doctrine of the moral neutrality of technology.

Given the style and level of analysis which Latour provides, it is hard to know how exactly to take this set of arguments. On the one hand, he appears to want to confront the whole of mainstream Philosophy by denying what he says are its basic categories. He is doing this, not on the basis of detailed and rigorous conceptual analysis, but rather through a dazzling fire hose of empirical studies of science and technology, metaphors, and images. This is more Finnegan's Wake than Principia Mathematica. However, since the sociologising that Latour invokes to support his dissolution of the distinctions is premised upon the methodological assumption that, for the purposes of giving a *sociological* description, we can suspend the distinction between

[18] In many ways, this can be seen as providing a moral twist to the standard actor-network theory argument that technology has material agency. see Pickering (1995)

representation and reality, fact and value (social constructivism *Is a methodological assumption*), philosophically we are getting no more out of the analysis than Latour has already put in.

Second, what does this flattening of ontology actually mean? If cars, hammers, power stations, software are to be viewed as actants standing alongside humans in webs of relationships, human and non-human, what does this imply for moral (and legal) *theory*? Is he really proposing that we should scrutinise the conduct of these technologies the way we scrutinise the conduct of people and hold them accountable in the same ways? Can our concepts of responsibility, blame and approbation be extended to objects and technologies?

Third, if the bridge from studies of technology to metaphysics is secured by the former's refusal to truck with modernist dichotomies, how are we to take the results of these studies and their success in sociology, studies of science, and now studies of ethics and technology? Are they of the same order (subject to the same strictures) as the studies they treat as their topics? Are they, too, no more than exercises in invention which are to be judged through the influence of relationships, interests, and ultimately power and (moral) domination?

Of course, as we saw in regard to Winner's claim about the politics of artefacts, what is under discussion might not be a proposition at all. It could be a (post-modern) joke, a rhetorical ploy pushing to the extreme a sociological account of technologies and tools. As such, it would be a trope, no more, intended to be left behind, rather as Hume advised all philosophising should, when moving from the study to the world of practical affairs.

Introna tries to resolve these difficulties by aligning Latour's claims with the view that Heidegger (1962) took on the constitution of a first philosophy. The primordial ground of such a philosophy must be our immersion in and experience of the world not our abstraction from and reflection on it. For Heidegger, the latter is not just Descartes' error, but the wrong turn taken by all western philosophy since the pre-Socratics. Following Latour, Introna suggests, the unified ontology is available through our experience of objects and technologies in the world around us. The foldings inherent within the latter are available to us as the "affordances" of this or that tool, this or that device. Such affordances are not added to the technology but "there" to be "grasped" by us in our ways of using them. Affordances constitute the possibilities and potentials of technology which are realised in use.[19] So for us, a mobile phone has a variety of uses. We can communicate with friends and relatives, store images on it, use it to manage our calendars, and so on. For a society with no

[19] We will just note, in passing, that Gibson's (1977) notion of "affordance" is based in and motivated by a very un-Heideggerian psychology. Unless Latour and Introna are using the term metaphorically, the introduction of "affordances" can only make the theorising of this ontology less consistent not more.

concept of wireless communications and "mobile apps", the phone can be no more than a paper weight. The culture of use is folded within the phone and enables our use of it.

Introna takes one further step, though, and suggests that it is this constitutive character of technologies which defines their political nature. He enables him to expand the span of the politicised decisions integral to technologies. As well as design and operative decisions, decisions over markets and users, decisions over implementation, roll-out and deployment, decisions about sales strategies and market entry, customer engagement, product quality, product maintenance and support, and of course product end of life, all have to be closed out and made under real conditions of time, budget and practicality. Each decision achieves closure on an issue: the inclusion and exclusion of particular outcomes and possibilities. To Introna, the cumulative effects of such decisions and their consequences within any socio-technical environment must be seen to be political in that they determine the meanings that the technology (the affordances, opportunities, possibilities) convey. This determination, he says, is "hegemonic ".

It is this ongoing, and often implicit, operation of hegemonisation - of inclusion and exclusion - inherent in all political sites which is the concern of a Disclosive Ethics. (2007 p 15)

Hegemonisation is outcome/consequence of all the design, implementation and roll-out decisions associated with ATMs, web search engines, face recognition systems, and so on. The ethical and political challenge is to reveal this hegemony and open up the possibility of its reversal. This is the role conceived for Disclosive Ethics.

We want to say a number of things about all this. First, despite the expansion of the conceptual apparatus to include elements of post-Gramscian political theory, the structure of the analysis remains steadfastly functional in form. An unauthored strategy, a hidden hand guided by the interests of the dominant, ensures that the nexus of human/technological relationships reproduces hegemonisation. But this is not a *finding* of this way of looking at technology. It is a motivating assumption. Hegemonisation is seen to be a functionally adaptive process whereby outcomes are rationalised in terms of dominant interests.

Second, and this is critical, to make the whole approach tractable, Introna, like Latour, turns the metaphysics, i.e the dissolution of the dichotomy between human agents and material culture, into a methodological assumption. For the purposes of carrying out his (sociological) studies, he proposes to treat human agents and material culture as similar orders of (moral) being. This licenses his description of them and their consequences. But it does no more than that. This methodological move is to be justified by the evidence it makes available to us and the insightfulness, rigour, interest, fertility, or novelty of the *sociological* findings it enables, not by the popularity or radicalness of ethical (or metaphysical) stance we might choose to draw from it. To justify that ethical stance, we need to show first when, where and how hegemonisation is taking

place (the close coupling of practice and function), and second why it is wrong (the ethical evaluation). For that, we would want a very different order of justification and a very different kind of argument; one which looked at detail of instances and cases. Without such an argument, the turn to Disclosive Ethics remains unjustified. There would be no more reason to hold with Introna that information technologies pose a critically important threat to the openness of our society than there would be to agree with Dr Pangloss that all is for the best in this best of all possible worlds.

This takes us to a third point and very familiar point. In none of the cases, examples, specimens that Introna discusses, is there any *evidence* for his argument. As a result the steps in the analyses become very loosely connected, something, again, that Introna shares with Winner. Furthermore, there is a deep paradox to be found here. The philosophic premise which is supposed to underpin modernity, the duality of fact and value, of how things are and how we see them, is precisely the premise which Latour wants overthrown. We cannot hold the distinction between representation and reality, fact and value. Using his conceptual apparatus of foldings and hegemonisation, Introna builds a picture of how information technology systems can be seen. This picture prioritises the politico-ethical consequences they can be described as having. But, if Disclosive Ethics is to work it has to be possible to reach conclusive judgments and finalise re-designed technologies, the picture has to be presented as how things must be *independent of how we are choosing to see them*. Were this not so, the arguments for Disclosive Ethics will run in open-loop. We can always counter them by prioritising another theme. Because he wants to intervene in the world of technology, Introna has to impose a conception of the world of technology from which to argue his case. This imposed picture is that technologies are political. But imposing a particular description runs directly counter to the post-modern tolerance for multiple realities. The ground falls away from under Introna's position.

Conclusion

That information technologies can be put to worrying uses is not in dispute. There are enough instances in the research literature and elsewhere for us not to want to debate that. Addressing this issue is a matter of careful design and equally careful regulation of the uses and contexts of such technologies. However, to say this is not to say, thereby, that information technologies are *necessarily* ethical or *inherently* political. A claim such as this is universal in its quantification. All technologies are political and ethical in their outcomes. The problem is that the claim can only be secured within a functional analysis, one where the purpose is to demonstrate what one means by inevitability or necessity of outcome in this regard. To put it starkly: functional analysis looks backwards to the analytic presuppositions not forward to the facts. And yet, if one wants to intervene in the world, to impose extra strictures on systems designers and developers, to demand existing systems be re-configured and re-built, then one has to offer an account that is rooted in how things actually are. It is because they really, really are political and ethical, that these

systems must be changed. Functional analysis does not tell you how things really, really are, except under the auspices of functional assumptions (to use the phrase). Faced with this impasse, Introna uses Latour's convoluted ontologising to try to unify the material and cultural worlds in a single moral frame; such a frame is how the world is. But the unified ontology is itself built on the overthrow of such distinctions. It proposes that these distinctions are nothing but ways in which we construct and enforce an account of reality. At that point, the whole project falls apart and Introna is left with nothing but exhortation and expostulation.

THE ETHICAL RESPONSIBILITIES OF ETHICISTS

By way of an epilogue to this whole discussion, we want to offer some thoughts about the expectations we might have of those in academic life who advocate ethical positions. The notion that such advocates might have *ethical responsibilities* themselves arises with particular sharpness in contexts such as the one we have been discussing where the evidence to support the claims being made is either insufficient to be conclusive, open to interpretation from entirely different perspectives, or just plain missing. Moreover, with regard to many sociological disputes it must be remembered (to repeat ourselves yet again!) it is extremely hard to see what evidence would actually resolve the dispute once and for all, even if sociologists could go out and gather it.

It is, of course, perfectly fair to assume that sociologists should be aware of this situation and hence be more than a little cautious about using their research as the basis of advocacy; such caution being a central theme in those parts of the student curriculum which address the assessment of sociological work. Would that this were true! None the less, some sociologists have endeavoured to find ways of licensing advocacy based upon the outcomes of sociological work. In our view, the most insightful contribution, and one which has suffered from the Chinese Whispers phenomenon more than most, is Max Weber's discussion of objectivity and value freedom in the Social Sciences (Weber 1948).

For Weber, the ethical issue of value freedom revolved around maintaining the clear distinction between what one was entitled to say *as a scholar according to the professional standards of scholarship* and what one might say as an ordinary member of society with personal preferences and attitudes. The point is not that one should not expect to find an entanglement between the two in any sociologist's particular set of convictions, but that such entanglements should not be ignored or minimised *in the classroom*. One ought to be able to expect that professional sociologists should be alert to the limitations of sociological findings and hence aware of their strength and the extent to which they can be stretched. What Weber wants to highlight is that one cannot assume neophytes or the untrained can make these kinds of judgements and hence know when the boundaries have been transgressed. Weber felt that the teacher had a professional duty not to elide the distinction between scholarship and advocacy in order to prevent their personal convictions being given undue authority simply by virtue of the teacher's standing as a scholar.

Whilst Weber's immediate focus of attention was that of pedagogic obligations, it seems to us the same strictures ought to apply in social policy and similar domains. One cannot expect those who might be the subjects of advocacy in these arenas to be attuned to the what we have called the nuances of theorising, the structure of argumentation, or the plausibility of descriptions. Consequently, following Weber's line of reasoning, although we do not expect those who advocate

particular social policies or policy interventions not to deploy sociological work in their arguments, we do think it behoves them to make clear just how qualified, open to argument, yet to be proven that evidence and those arguments are. Alternative positions should be identified and outlined. And the whole open-ended character of the issues and debates ought to be clearly recognised.

Those who, on the basis of ethical judgements, advocate interventions in political and professional life surely have some obligations to those who may choose to follow their advice? We do not imagine anyone would want to define these obligations in a *contractual sense* where the advocate had distinct and enforceable liabilities should the advice prove unsound, though it should perhaps be remembered that those who are being asked to change their professional practice may very well have such liabilities. Nonetheless, surely there should be some sense of responsibility for what might be entailed in taking up the policies and proposals being argued for? What re-assurances might be given that 'early warning' conditions' can be defined for when the consequences of acting on advice given are not those envisaged; or that such designed consequences can be rolled back when it is clear that the decisions made on the basis of the ethical judgements were wrong? And, of course, both of these beg questions about the robustness of the sociological analysis carried out as a result of the implementation of the policy. How sure can we be that the sociological reasoning within design project teams, to take the example we have been discussing throughout this paper, will be able with any kind of specificity to anticipate what the social consequences of some design decision or other might be? Given what we have said about the nature of sociological analysis, you would expect us to advise angels to tread very carefully at this point.

In short, to advocate intervention in the world on the basis of ethical judgement carries with it ethical responsibilities. These responsibilities are all the more acute when the grounds for making such judgements are as uncertain as we have suggest sociological reasoning can be. Should ethicists do not want to accept such responsibilities then we, at least, do not feel we need to accept their exhortations.

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