

# The Perception of the Environment

Essays on livelihood, dwelling and skill

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Chapter Sixteen

## Society, nature and the concept of technology

### INTRODUCTION: TECHNOLOGY AND SOCIETY

For many centuries, Western thought has been dominated by the idea that the mission of mankind is to achieve mastery over nature. The world of nature is commonly characterised by its opposition to the essential condition of humanity, whose purest expression is taken to be civil society. My starting point in this chapter is the observation that the meaning of 'technology', as currently understood in the West, is firmly fixed within this polarity of society and nature. It is important to recognise from the outset, however, that terms such as society, nature and technology are far from mere labels, in themselves harbouring no moral, political or evaluative commitment. Of the concept of society, it has been observed that to use it is not to denote a thing but to make a claim (Wolf 1988: 757). Similarly, if we want to know what words like nature and technology mean, then rather than seeking some delimited set of phenomena in the world – as though one could point to them and say 'There, that's nature!' or 'that's technology!' – we should be trying to discover what sorts of claims are being made with these words, and whether they are justified. In the history of modern thought these claims have been concerned, above all, with the ultimate supremacy of human reason. Thus society is considered to be the mode of association of rational beings, nature the external world of things as it appears to the reasoning subject, and technology the means by which a rational understanding of that external world is turned to account for the benefit of society.

Now to the evolutionary anthropologists of the eighteenth and nineteenth centuries it appeared self-evident that societies differed in the degree of cultivation of their powers of reason, in the scope of their understanding of the natural world, and hence also in the extent to which they were able to bend the forces of nature to their own will. The more 'civilised' the society, and the more complex its technology, the more complete was thought to be its mastery or control over nature; conversely in 'primitive' societies, with simple technologies, control over nature was thought to be weak or non-existent. The most primitive societies of all, of course, were those of so-called 'savages', hunter-gatherers who had yet to achieve that basic level of control marked by the domestication of animals and plants. Such people were supposed to live wholly at the mercy of the vicissitudes of nature, and thus to represent the absolute antithesis of Western industrial man who, through the rational application of scientific knowledge, had at last subjugated nature to his sovereign will. And for those who saw technology as the driving force of social development, the simplicity of technology among primitive hunter-gatherers accounted for the rudimentary nature of their social organisation, just as the advanced industrial technology of the West was supposed to underwrite a complex social structure.

In contemporary anthropology, we have become used to treating such arguments with suspicion. We cite examples of societies in which an apparently simple technology is found side by side with systems of kinship and ritual of the utmost complexity. There is, we say, no single measure of social advancement; a society may score highly on one criterion but low on another. Technology is a Western preoccupation, but Australian Aborigines are preoccupied with kinship: neither kinship nor technology furnishes a universal scale of complexity. If Westerners belittle Aborigines on account of the simplicity of their technology, Aborigines are equally entitled to belittle Westerners on account of their primitive notions of kinship. As Franz Boas wrote long ago, 'we have simple industries and complex organisation', as well as 'diverse industries and simple organisation' (1940: 266–7). This denial of any necessary link between technology and society or culture has since become enshrined in the dominant relativistic credo of modern cultural anthropology (Pfaffenberger 1988: 243).

Yet despite the anthropological critique of the evolutionist doctrine of technologically-driven progress, no-one seems to doubt that there is a sphere of capability in every human society that can be identified by the concept of technology, and that in primitive societies (and above all in societies of hunters and gatherers) it may be characterised by its relative simplicity. Indeed in their self-conscious and often contrived attempts to avoid the derogatory connotations of the notion of primitiveness, anthropologists are inclined to qualify their references to 'simple societies' with the rider that 'simple' denotes *technological* simplicity, and carries no immediate implications as regards social organisation and culture. Thus we are told that hunting and gathering is essentially a technological regime, and that we are not entitled to draw conclusions from the rudimentary nature of this technology about the form or elaboration of the social relations in which its practitioners are engaged. It is meaningless, it is said, even to speak of 'hunting and gathering societies' as a class, since these societies have nothing more in common than the purely contingent fact that their members hunt and gather for their subsistence, possessing neither domestic herds nor crops.

Two views that are diametrically opposed often turn out to be so because they are based on common premises, and this is certainly the case with the opposition between evolutionism and relativism that I have sketched out above. On one side, in brief, are those who claim that the essential institutional forms of society are dictated by the requirements of operating a technological system of some given degree of complexity, and therefore that social change is driven by – and depends upon – technological change.<sup>1</sup> On the other side are those who hold that technology exerts no influence upon the form of a society, beyond setting outer limits on the scope of human action. Within those limits, society and culture are said to follow their own historical course, irrespective of the nature or complexity of the technological system. Not only, however, do both sides suppose that technology can be scaled in terms of degrees of complexity; they also share the assumption that technology comprises an objective system of relations among things, that is wholly *exterior* to the social domain of relations among persons. The impact of technology on society may be affirmative or neutral, its formulae prescriptive or permissive, but in itself technology has no part in society: it is simply given as an independent, external factor.

Having thus been placed outside of society and culture, technology could – so far as most anthropologists were concerned – be safely ignored. It was considered to be just one of those things, like climate or ecology, that may or may not be a determining factor in human affairs, but whose study can be safely left to others. As climate is for meteorologists and ecology for ecologists, so technology is for engineers. The study of technological

processes was not seen as an integral part of the study of social relations, or of the study of those systems of meaning that go by the name of culture, and indeed anthropology lacked any framework of concepts or theoretical ideas in which to handle such processes. The result is that until very recently, insofar as technology appeared in anthropological accounts at all, it generally did so in the form of lists or inventories, catalogues of tools and techniques which – however valuable in themselves as documentary records – bore a purely descriptive purpose. Even today, and despite an upsurge of interest fuelled by the revolution in computing and telecommunications, the study of technology remains one of the least developed aspects of anthropological scholarship (a view shared, *inter alia*, by Lemmonier 1986, Pfaffenberger 1988, 1992, and Hornborg 1992).

Now it is precisely the notion that society and technology are external to one another that I wish to challenge. In my view, far from being a timeless datum of the human condition, this externality is a product of history, and a relatively recent one at that. It has emerged in the West, in the last few centuries, hand in hand with what could be called a 'machine-theoretical' cosmology. We cannot, I think, retroject into history or prehistory the modern separation of society and technology, nor can we impose it on non-Western societies, without seriously distorting our understanding of them. My thesis, in a nutshell, is that in the societies we study – perhaps even including our own – technical relations are embedded in social relations, and can only be understood within this relational matrix, as one aspect of human sociality. Two further claims follow: first, that what is usually represented as a process of complexification, a development of technology from the simple to the complex, would be better seen as a process of externalisation or of disembedding – that is, a progressive cutting out of technical from social relations. Secondly, the modern concept of technology, set up as it is in opposition to society, is a product of this historical process. If that is so, we cannot expect to find a separate sphere of human endeavour corresponding to 'technology' wherever we choose to look.

To put my case in the strongest possible terms: *there is no such thing as technology in pre-modern societies*. Let me add at once that I do not mean that people in such societies lack tools or technical skills. My point is that the concept of technology, at least in its contemporary Western usage, sets out to establish the epistemological conditions for society's control over nature by maximising the distance between them. Focusing in particular on societies of hunters and gatherers, I shall show that through their tools and techniques hunter-gatherers strive to *minimise* this distance, drawing nature into the nexus of social relations, or 'humanising' it. This 'drawing in' has as its object to establish the conditions not of control but of a kind of mutualism. In this, the tool delivers a force that is personal rather than mechanical. Hence technical relations, far from being set apart from social relations, are embedded in them.

Before proceeding further, I should perhaps add that the critical strategy I am adopting is a well-tryed one in anthropology. Substitute the term 'economy' for 'technology', and everything I have said would be well in tune with most recent thinking in economic anthropology. Over the last two or three decades, anthropologists have been at pains to show how 'economy' and 'society' became institutionally separated in the history of Western capitalism, how the category of the economic is itself a product of this history, how in pre-capitalist societies economic relations are embedded in social relations, and how – with the development of market-oriented capitalism – economic life was progressively disembedded from social life (Polanyi 1957, Sahlins 1969, Godelier 1972: 92–103, Dumont 1986: 104–12). All that I am doing is to extend the same kind of argument to the concept of technology, which up to now has escaped the critical attention that has been devoted to the

concept of economy. I believe this critical work is an essential first step in building a coherent and theoretically informed anthropology of technology, one that takes us beyond the mere cataloguing of tools and techniques from cultures around the world.

## TOOLS, TECHNIQUES AND TECHNOLOGY

In the last chapter, I distinguished between technique and technology in terms of whether human powers of perception and action are either immanent in, or detached from, the processes by which things get made. In line with this distinction, in what follows I shall take technique to refer to *skills*, regarded as the capabilities of particular human subjects (see Layton 1974:3–4), and technology to mean a corpus of generalised, objective knowledge, insofar as it is capable of practical application. Both technique and technology must, of course, be distinguished from *tools*. A tool, in the most general sense, is an object that extends the capacity of an agent to operate within a given environment. But you do not necessarily have to use a tool to implement a technique. It is a fundamental mistake, as Marcel Mauss (1979; 104) recognised, to think that 'there is technique only when there is an instrument'. In the hands of a hunter or warrior the spear may be a tool for bringing down game or wounding an adversary, but in the hands of the athlete the flight of the javelin becomes an end in itself. He uses no instrument to augment his throw, yet he still has his technique.

Why is it, then, that in both specialised anthropological and popular Western discourse, it tends to be assumed that technical activity is *ipso facto* tool-using activity? Consider, for example, Roy Ellen's definition of subsistence technique: 'a combination of material artefacts (tools and machines) and the knowledge required to make and use them' (1982: 128). Here, technique is regarded not as a property of skilled subjects, but as an inventory of instrumental objects together with their operational requirements. This view, I believe, results from a conflation of the technical with the mechanical, a conflation that lies at the very core of the modern concept of technology. For as we saw in the last chapter, what this concept does, in effect, is to treat the workman as an *operative*, putting into effect a set of mechanical principles that are both embodied in the construction of the instruments he uses, and entirely indifferent to his own subjective aptitudes and sensibilities. In other words, productive work is divorced from human agency and assigned to the functioning of a device. Thus, technique appears to be 'given' in the operational principles of the tools themselves, quite independently of the experience of their users. If all technical activity is tool-using activity, it is because the technique is seen to reside, outside the user, in the tool, and to come 'packaged' – like the instruction manual for a piece of modern machinery – along with the tool itself.

My contention, to the contrary, is that technique is embedded in, and inseparable from, the experience of particular subjects in the shaping of particular things. In this respect it stands in sharp contrast to technology, which consists in a knowledge of objective principles of mechanical functioning, whose validity is completely independent both of the subjective identity of its human carriers and of the specific contexts of its application. Technique thus places the subject at the centre of activity, whereas technology affirms the independence of production from human subjectivity. Drawing out the contrast, Carl Mitcham notes that

... tools or hand instruments tend to engender techniques, machines technologies ...  
Technique is more involved with the training of the human body and mind ... , whereas

technology is concerned with exterior things and their rational manipulation... Techniques rely a lot on intuition, not so much on discursive thought. Technologies, on the other hand, are more tightly associated with the conscious articulation of rules and principles... At the core of technology there seems to be a desire to transform the heuristics of technique into algorithms of practice.

(1978: 252)

Now it is commonly supposed that where there are techniques there must be technology, for if skill lies in the effective application of knowledge, there must be knowledge to apply (Layton 1974). I believe this view to be mistaken. For acting in the world is the skilled practitioner's way of knowing it. It is in the direct contact with materials, whether or not mediated by tools – in the attentive touching, feeling, handling, looking and listening that is entailed in the very process of creative work – that technical knowledge is gained as well as applied. No separate corpus of rules and representations is required to organise perceptual data or to formulate instructions for action. Thus, skill is at once a form of knowledge and a form of practice, or – if you will – it is both practical knowledge and knowledgeable practice. Moreover as a form of knowledge, skill (or technique) is different in kind from technology. The former is tacit, subjective, context-dependent, practical 'knowledge how', typically acquired through observation and imitation rather than formal verbal instruction. It does not therefore have to be articulated in systems of rules and symbols. Technological knowledge, by contrast, is explicit rather than tacit, objective rather than subjective, context-independent rather than context-dependent, discursive rather than practical, 'knowledge that' rather than 'knowledge how'. It is, besides, encoded in words or artificial symbols, and can be transmitted by teaching in contexts *outside* those of its practical application.

Historically, as the skilled manipulation of tools has given way to the operation of mechanically determined systems, knowledge of the first kind has been gradually devalued, whilst knowledge of the second kind has come to be regarded as increasingly indispensable. Far from complementing technique by providing it with a foundation in knowledge, technology has forced a division between knowledge and practice, elevating the former from the practical to the discursive, and reducing the latter from creative doing or making to mere execution. To see this, one has only to compare the classical, Aristotelian notion of *tekhne*, with its connotation of skilled craftsmanship, with the modern idiom in which to say of practice that it is 'purely technical' is to intimate that it is merely mechanical. In the dichotomy between discursive knowledge and executive practice, no space remains for the practical knowledge (or knowledgeable practice) of the craftsman. Technology, in short, appears to erase technique, rather than to back it up.

Moreover the transition from technique to technology, on the level of knowledge, has its precise counterpart, on the level of material instruments, in the transition from the tool to the machine. Recall that in the classical conception, *tekhne* referred to the skilled making of the craftsman, while *mekhanē* referred to the manually operated devices that assisted its application. But now, just as technology has been removed from the sphere of practitioners' personal knowledge and experience, so the machine has come to signify the independence of technical operations from human sensibility. Overall, then, the evolution from the classical dualism of *tekhne/mekhanē* to the modern dualism of technology/machine has been one in which the human subject – both as an agent and as a repository of experience – has been drawn from the centre to the periphery of the labour process. In other words, as I have tried to show schematically in Figure 16.1, it has been a movement from the personal to

the impersonal. I now intend to demonstrate that this movement is tantamount to a disembedding of technical relations from their matrix in human sociality, leading to the modern opposition between technology and society.

### THE TECHNICAL AND THE SOCIAL

It is commonplace in anthropology to draw an absolute distinction between the domains of technical and social phenomena. This doubtless owes much to the influence of Emile Durkheim. The earliest anthropological reference to the distinction that I know is to be found in a tantalising footnote to the conclusion of Durkheim and Mauss's essay of 1903 on *Primitive Classification*, where they write of what they call 'technological classifications' as vague and unsystematic constellations of ideas, quite unlike the systematically interconnected categories of scientific classification which are grounded in the structure of social groups. Scientific classifications, Durkheim and Mauss write,

are very clearly distinguished from what might be called technological classifications. It is probable that man has always classified, more or less clearly, the things on which he lived, according to the means he used to get them: for example animals living in the water, or in the air or on the ground. But at first such groups were not connected with each other or systematized. They were divisions, distinctions of ideas, not schemes of classification. Moreover, it is evident that these distinctions are closely linked to practical concerns, of which they merely express certain aspects.

(1963: 81–2, fn. 1)<sup>2</sup>

What is important for my present argument is the way technological classification is linked here to the experience of individuals in practical activity, as opposed to the structuring force of society. From the start, technology was placed firmly on the individual side of a pervasive dichotomy between individual and society, while science was set apart on the social side.

In the subsequent elaboration of the Durkheimian paradigm, the distinction between technology and science was referred back to that between magic and religion, the former issuing from the individual and pragmatic in intent, the latter issuing from society and fundamentally expressive. The same distinction was later taken up by Edmund Leach, in a series of attempts to force a division between *technical* and *ritual* types or aspects of behaviour. Leach defines technical behaviour in purely pragmatic, means-ends terms: it 'produces observable results in a strictly mechanical way'. Ritual behaviour, by contrast, is essentially communicative, and serves to convey information, in a symbolic code, about group membership or social identity (Leach 1966: 403: cf. 1954: 12, 1976: 9). The division, then, is between a mechanics of technical systems and a semiotics of social systems. All practical action is 'fully mechanical' in the sense that its effects are entirely predictable

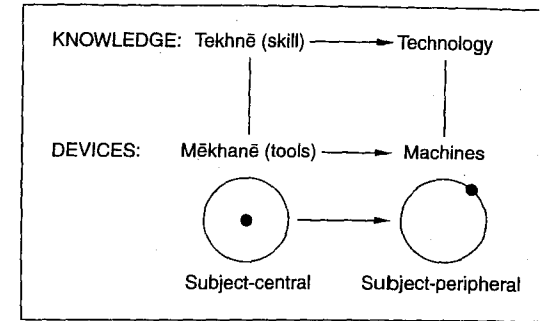


Figure 16.1 The transition in knowledge and devices from the personal to the impersonal, associated with the substitution of the modern dichotomy of technology/machine for the classical dichotomy of *tekhne/mekhanē*.

from its initial conditions (1976: 23), whereas all social action, since it is designed to communicate a state of affairs but not to change it, is inherently non-practical.

To illustrate the effects of applying this conceptual framework across the board of human societies, let me return to the case of hunters and gatherers. It comes as no surprise that the usual anthropological characterisation of the activities of hunting and gathering as 'purely technical' carries the implications that they are not only 'fully mechanical' but also residually *non-social*. Thus the work of subsistence production is effectively removed from the sphere of social action, becoming merely a 'need-satisfying process of individual behaviour' (Sahlins 1972: 186 fn. 1). When human beings hunt and gather, even when they do so in co-operation, they can act only in their 'natural' capacity as individuals, rather than as social persons. 'Given such a distinction', as Gísli Pálsson has shown, 'production must take place in nature. The appropriation of nature only becomes social when the resources extracted from nature enter relations of sharing or exchange among groups' (Pálsson 1991: 8). If, as Durkheim maintained, there are two parts to a man, the individual and the social being, it is apparently the individual who hunts and gathers, and the social being (as a member of a more inclusive group) who shares (Ingold 1988a: 275, cf. Durkheim 1976: 16). In Leach's terms, every act of hunting and gathering would be a mechanical event, and every act of sharing a communicative or semiotic event.

This view of the separation of production and distribution has been reinforced by a peculiarly Durkheimian reading of the distinction, taken from Marx, between social relations and technical forces of production, according to which these constitute mutually exclusive domains. Representing a widely held position in Marxist anthropology, Jonathan Friedman has written that 'the social relations of production are not, nor can they be, technical relations' (1974: 447). Included in the latter are the forces mechanically exerted by human bodies, when set to work, whether singly or in conjunction. Relations of co-operation in the tasks of hunting and gathering are thus built into the operation of the technical system – they are *technical* relations, part of the organisation of work, as distinct from the *social* relations activated in the distributive practices of sharing. Yet as Marx surely recognised, the externalisation of the forces of production was a historical consequence of the development of the machine. Where, as in hunting and gathering, food production depends on the skilled handling of tools, and indeed of one's own person, the productive forces appear as the embodied qualities of human subjects – as their technical skills. Such qualities cannot be generalised: whereas a technology is indifferent to the personhood of its operators, techniques are active ingredients of personal and social identity. Thus the very practice of a technique is itself a statement about identity; there can be no separation of communicative from technical behaviour.

Our conclusion must be that in hunting and gathering societies, the forces of production are deeply embedded in the matrix of social relations. That is to say, the 'correspondence' between technical forces and social relations is not external but internal, or in other words, the technical is one *aspect* of the social. The modern semantic shift from technique to technology, associated with the ascendancy of the machine, is itself symptomatic of the disembedding of the forces of production from their social matrix, transforming the correspondence between forces and relations of production from the internal to the external, and setting up the now familiar opposition between technology and society. For as I have already shown, the concept of technology signifies the withdrawal of the person from production, which is consequently reduced to the operation of a quasi-mechanical system comprising human bodies, instruments and raw materials. If persons, human subjects, are external to production, then the sphere of social relations

(between persons) must be external to the sphere of technical relations which, if they involve human beings at all, involve them as the bearers of natural and not personal powers (on this distinction, see Shotter 1974: 225).

The danger is that we are inclined to read back into history the modern separation of technology and society, identifying the forces of production with all that is external to the human subject. Hence we imagine the primitive precursors of the machine to have been such items of material culture as the hand-axe, spear and digging-stick. And this, in turn, leads us to view technical evolution as a process of complexification, accompanied perhaps by a simplification in the social spheres of kinship and ritual. However the machine is not simply a more advanced substitute for a tool, nor were hand-tools the original forces of production. For the development of the forces has transformed the entire system of relations between worker, tool and raw material, replacing subject-centred knowledge and skills with objective principles of mechanical functioning. In short, and to reiterate the conclusion of my argument from the last chapter, technical evolution describes a process not of complexification but of *objectification* of the productive forces.

This result suggests a radical recasting of the relation between technology and kinship. Instead of seeing an evolution in parallel, in which the former becomes ever more dominant and elaborate as the latter declines in significance, the view I have proposed suggests that the technical forces of production were originally *consubstantial* with the social relations of kinship. Only subsequently, as kinship was disengaged from the organisation of production, did the forces 'split off' and acquire separate institutional identity as a technology. At the same time the objectives of production were themselves transformed from the constitution of persons to the manufacture of things. In short, to find the antecedents of technology, we should look to the sphere of artifice, contained in social relations, rather than to the artefacts of material culture (Ridington 1982: 470).

#### WHAT TOOLS ARE FOR

The next step in my argument is to show how this view of the embeddedness of technical in social relations affects our understanding of the nature and use of the tool. In itself, of course, the tool is nothing (Sigaut 1993: 383). 'Being a tool' is not at all the same as, say, 'being a stone' or 'being a piece of wood'. For whereas the latter refers to intrinsic properties of the object itself, the former refers to what it affords for a user. An object – it could be a stone or a piece of wood – *becomes* a tool through becoming conjoined to a technique, and techniques, as we have seen, are the properties of skilled subjects. The presence of such a subject is already presupposed in our description of the object as a tool of a certain kind. Thus the tool is not a mere mechanical adjunct to the body, serving to deliver a set of commands issued to it by the mind; rather it extends the whole person. Indeed there is a certain parallel between the use of tools in production and the giving and receiving of gifts in exchange. The tool has an impact on raw material, as the gift has an impact on its recipient, only so long as it is animated by an *intention* that issues from the person of the user or donor. Divorced from the context of production, the tool reverts to its original condition as an inert object; likewise the gift is inert outside the social context of exchange (Maus 1954[1925]: 10). Both tool and gift mediate an active, purposive engagement between persons and their environments.

Returning to hunters and gatherers, we can ask how this mediation is effected in the context of their relations with their environments. As Robin Ridington (1982: 471) has pointed out, hunter-gatherers 'typically view their world as imbued with human qualities

of will and purpose'. From their perspective, tools are like words: they mediate relations between human subjects and the equally purposive non-human agencies with which they perceive themselves to be surrounded. Thus the tool, as I showed in Chapter Four (p. 72), is a link in a chain of personal rather than mechanical causation, which serves to deliver intentional action and not merely physical or bodily force. Moreover, unlike herdsmen and farmers, whose tools are used to establish some degree of domination over their environments, hunters and gatherers do not regard their tools as instruments of control. Thus in hunting, it is commonly supposed that the animal gives itself to be killed by the hunter who, as a recipient, occupies the subordinate position in the transaction. The spear, arrow or trap serves here as a vehicle for opening or consummating a relationship. If the arrow misses its mark, or if the trap remains empty, it is inferred that the animal does not as yet intend to enter into a relationship with the hunter by allowing itself to be taken. In that way, the instruments of hunting serve a similar purpose to the tools of divination, revealing the otherwise hidden intentions of non-human agents in a world saturated with personal powers of one kind and another. In short, whereas for farmers and herdsmen, the tool is an instrument of control, for hunters and gatherers it would better be regarded as an instrument of revelation.

This understanding that hunters and gatherers have of their relations with non-human components of their environments is fundamentally at odds with that basic premise of Western thought with which I began, that the destiny of humankind is to achieve domination over nature. 'In our traditional ways of thinking', as Winner writes, 'the concept of mastery and the master-slave metaphor are the dominant ways of describing man's relationship to nature, as well as to the implements of technology' (1977: 20). Viewed from this perspective, hunters and gatherers appear to be engaged in a struggle for existence which, on account of the simplicity of their material equipment, is not yet won. For them, nature remains untamed. Yet herein lies a paradox. For if technology implies the human control over nature, and if the condition of hunter-gatherers – or more generally of 'primitive man' – is the absence of such control, how can there be such a thing as 'primitive technology'?

Though the paradox is never stated so explicitly in the literature, the solution comes through clearly enough. It is to assume that hunter-gatherers are engaged in the operation of a system of forces which is none other than nature herself, viewed – characteristically, in Western eyes – as a vast, all-encompassing mechanism. Tied to the workings of this mechanism, they are regarded as subservient to nature in much the same way that, in the modern era, industrial workers are subservient to the artificially engineered machines of the factory. It follows that hunter-gatherer technology is seen to be grounded in the properties of the natural world just as Western technology is embodied in the artificial machine. Both delimit a set of production possibilities that are given prior to, and independently of, the persons of the producers. It is for this reason that the forces the hunter-gatherer operates are commonly denoted by the hybrid 'techno-environmental'. Where for everyone else, technology is supposed to be on the side of Man against Nature, for hunters and gatherers it appears to be on the side of Nature against Man, revealing in its application the hegemony of natural law rather than the dominance of human society and its interests. This, incidentally, is a view shared equally by both advocates and opponents of so-called 'techno-environmental determinism'. Advocates argue that technology and environment together determine social form, opponents argue that social form is independent of techno-environmental constraint, but both take it for granted that 'techno' is something that is intrinsically linked to environmental conditions, rather than an imposition of society.

My solution to the problem of whether technology lies on the side of nature or human society is simply to dispense with the dichotomy, and with it the concept of technology that is predicated on this dichotomy. The paradox then promptly disappears. What we have in reality are human beings, living and working in environments that include other humans as well as a variety of non-human agencies and entities. Through their experiences of dealing with these various components of the environment, persons develop with specific aptitudes and sensibilities, that is as bearers of techniques. Reciprocally, through the deployment of their technical skills, people actively constitute their environments. But in this mutually constitutive interrelation between persons and environment there is no absolute dichotomy between human and non-human components. There are techniques for engaging with fellow humans just as there are techniques for engaging with the animals and plants on which life depends, or with materials such as wood, clay or stone in the making of equipment. Any or all of these techniques may involve the use of tools. However these tools, as I have shown, are intended not to control but to reveal. And they are used not in a failed attempt to achieve emancipation from an alien world of nature, but in a successful attempt to draw the inhabitants of that world into an unbounded sphere of intimate sociality.

## CONCLUSION

Hunters and gatherers have secured their place in Western thought as the bearers of a simple technology, as representatives of the original baseline from which a gradual process of complexification eventually culminated in the advanced technologies of the modern world. I have argued, to the contrary, that the concept of technology is itself a product of a modern machine-theoretical cosmology. One is inclined to see, in its indiscriminate extension to society at large, a particular instance of the more general anthropological fetishisation of culture, another Western concept which we have turned upon others as a mirror of our own superiority. People in 'primitive' or 'traditional' societies are made to appear as though their practical activities were entirely bound to the operation of technology, as their thought to the precepts of their culture, the one providing material support for the other. Technology and culture, twin pillars of the modern ideals of progress and enlightenment, confine the rest of humanity to the monotonous execution of determining systems: as technology determines practice, so culture determines thought.

Once the concept of technology is unpacked it is evident that its application distorts our understanding – above all of hunting and gathering societies – in the following ways:

- 1 Technique is detached from the practical experience of human subjects and ascribed to the properties of an instrumental apparatus, of which people are but mechanical operators.
- 2 Technical activity is partitioned off from social activity, and likewise production is separated from distribution as issuing from individuals and social persons respectively.
- 3 Technical forces are grounded in an environment conceived as 'nature', an alien and dehumanised presence that seems to dictate the terms of accommodation.

The principal conclusions of my argument are really two-fold. The first, reinforcing my thesis in Chapter Fifteen, is that technical evolution has to be seen as a process not of complexification but of objectification and externalisation of the forces of production. The second, related conclusion is that in the course of this evolution, technical relations have

become progressively disembedded from social relations, leading eventually to the modern institutional separation of technology and society. The implications for anthropology are that we can no longer follow the Durkheimian precedent of taking this separation for granted, nor can the concept of technology remain immune from critical scrutiny. It is high time to restore technique to its rightful place alongside economy, politics, religion and kinship as a proper object of social anthropological inquiry.

## Chapter Seventeen

# Work, time and industry

Much anthropological discussion is couched in terms of a pervasive opposition between 'Westerners' and other, 'non-Western' people. Amongst other things, it is argued that Westerners have a specific attitude to time and work that is not shared by people in non-Western societies. I want to propose here that while the concepts of time and work have indeed acquired specific meanings through their implication in such key historical transitions as the rise of capitalism and the growth of industrial manufacture, there is nevertheless a sense in which none of us are Westerners, and that the challenge that non-Western perspectives present to Western modes of apprehension exists at the very heart of our *own* society, in the mismatch between our shared experience of dwelling in the lived-in world and the demands placed on us by external structures of production and control that seem to leave only a residual space, divorced from culture and social life, where we can truly be ourselves.

I shall proceed as follows. First, I consider the attitudes to work and time of people in 'traditional' or pre-industrial societies who still retain a large measure of control over the rhythms of their working lives. For such people, I suggest, time is intrinsic to the array of specific tasks that make up the pattern of quotidian activity of a community. I go on to show how the formal logic of capitalist production undermines this task-orientation by establishing an absolute division, in principle, between the domains of work and social life. This division, however, does not naturally conform to experience but is rather enforced, to varying degrees, against a resistance founded in the inevitability of people's mutual involvement in the concrete settings of practical activity. The very instruments – above all the industrial machine and the clock – that in theory serve to disengage the time and work of production from the current of social life, are in practice reappropriated by their operators in the process of production, not of commodities for the market, but of their own personal and social identities. To exemplify this point, I shall draw on some studies of one particular category of industrial workers, namely locomotive drivers. In conclusion, I argue that if we find the time-awareness of people in societies other than our own hard to grasp, this is not because it is strange to our experience, but rather because the political, economic and ideological apparatus of the 'West', with its peculiar conjunction of individual freedom and clockwork necessity, has made us, in a sense, strangers to ourselves.

### TASK-ORIENTATION

Speaking of people in so-called primitive societies, Cato Wadel has observed that what is characteristic of these societies 'is not that activities we term as work are not conceptualised, but that these activities are conceptualised *in association with* social relations' (Wadel