Beginning with the environment

This chapter is the latest in my attempts over two decades and more, and that are still ongoing, to figure out what is meant by the environment of an animal. Coming from a background in ecological anthropology, which professes to study the relations between people and their environments, I cannot avoid the questions of what an environment is and, more particularly, what, if anything, is special about the environments of those animals we call human beings. Initially, my inquiries were prompted by a realisation that ecological anthropology appeared to have reached an impasse that was blocking further development in the subject. It lay in the contradictory imperatives, epitomised in the title of a celebrated book by Marshall Sahlins (1976), of *culture* and *practical reason*. Does all meaning and value lie in systems of significant symbols? If so, then the motives and finalities for human action on the environment must lie in what the mind brings to it: in the ideas, concepts and categories of a received cultural tradition. Yet does not culture with its artefacts and organisational arrangements, and the knowledge of how to apply them, provide human beings with the equipment to draw a livelihood from the world around them? Would they not, as Clifford Geertz once remarked (1973: 49–50), be crippled without it? If so, then whence come the ultimate requirements of human practice if not from the environment itself? Precisely where are we to place culture in the nexus of human environmental relations? Does it dictate the terms of adaptation, or is it a means of adaptation on terms dictated by nature, or both at once?

All sorts of ingenious solutions had been proposed to this dilemma, branded with a bewildering array of cumbersome labels – cultural materialism, neofunctionalism, symbolic ecology, structural Marxism – whose very clumsiness was symptomatic of epistemological collapse. None of them offered a satisfactory way out. Searching around for an alternative approach, I began to wonder whether the source of the difficulty might lie in the one assumption that everyone had taken for granted: namely that human relations with the environment are necessarily mediated by culture (Ingold 1992). After all, non-human animals that – with one or two possible exceptions – are not supposed to share the human capacity for symbolic representation are nevertheless quite well able to get along in their
environments. Are we really meant to believe, as advocates of cultural reason would have it, that all meaning is symbolic, and therefore that non-humans inhabit meaningless worlds? To my mind, such a conclusion seemed absurd. So to turn the question around, I asked: ‘What kind of meaning can there be in the absence of symbolic representation?’ If we could only identify the sources of environmental meaning for non-human animals, then we could go on to consider the extent to which such sources are available to human beings as well. Only when these sources are exhausted would we finally need to have resort to the sphere of cultural representation.

Looking for answers to my question, I found none in mainstream psychology, nor any in the ethological study of animal behaviour. For the most part, cognitive psychologists were convinced that there could be no action in the world that was not preceded and determined in its course by an interior mental representation – that is, by an intention conceived in thought. If animals could not think or intend, then neither could they act. All they could do is behave, responding more or less automatically to received stimuli through innate mechanisms loosely known as ‘instincts’. No meaning there! The majority of students of animal behaviour took the same view. Admittedly there were mavericks such as Donald Griffin (1984), who surmised that even the lowly insects might be capable of deliberating over the course of action. They too assumed, however, that there could be no action without forethought. Their theory of meaning, which rested on a Cartesian split between the thinking mind and the executive body, diverged not at all from the mainstream; they differed only in where they drew the line, in the animal kingdom, between creatures with minds and creatures without. Yet is it not ironic that we should expect of the ant or bee, as a condition of its finding some meaning in the environment, that it holds before its mind some representation of the world and acts in accordance with it, when this is something we humans so rarely do ourselves? How often, I wonder, do we think before we act? Even when we do, the action hardly follows automatically from the thought, and may often diverge from it in ways never intended. As the philosopher Alfred North Whitehead wisely observed, ‘from the moment of birth we are immersed in action, and can only fitfully guide it by taking thought’ (Whitehead 1938: 217).

I therefore had to leave the mainstream to find my answers. In psychology I turned to the work of James Gibson, whose ecological approach to perception, developed in 1950s and 1960s, was explicitly opposed to the prevailing paradigm of cognitivism. And in ethology I rediscovered the long neglected, pre-war writings of the Estonian-born pioneer of biosemiotics, Jakob von Uexküll. Both seemed to offer a radically alternative way of thinking about meaning, finding it not in the correspondence between an external world and its interior representation, but in the immediate coupling of perception and action. Yet, as I also found, behind this commonality lay significant differences.

James Gibson and the concept of affordance

Gibson’s first move is to distinguish very clearly between ‘the animal environment’ and the ‘physical world’ (Gibson 1979: 8). Physics may strive to comprehend the nature of the world as it really is, pared down to its essential constituents of force, energy and matter. An environment, however, does not exist in and of itself. It exists only in relation to the being whose environment it is. Thus, just as there can be no organism without an environment, so also there can be no environment without an organism (see also Lewontin 1982: 160).
Though no less real than the physical world, the environment is reality for the organism in question (Ingold 1992: 44; 2000a: 168). Gibson’s next step is to show that the fundamental constituents of any environment comprise what he calls affordances (Gibson 1979: 127). His argument is that in encountering any particular environmental object, the animal perceives what it facilitates or hinders in the immediate context of its current activity. Perception, then, is not a matter of affixing some meaning to the object – of recognising it as one of a certain kind to which certain uses may be attached – but of discovering meaning in the very process of use.

Despite the clarity of Gibson’s reasoning, it is in fact shot through with contradiction. The problem lies in his inability to reconcile his relational understanding of the environment with an older and more conventional view that posits the environment as a set of objective conditions that exist independently and in advance of the creatures that come to inhabit it, and to which they must perforce adapt. His solution is to try to have it both ways, as the following passage reveals:

An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal and mental. But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer.

(ibid.: 129)

Are affordances, then, objectively and physically instantiated in the environment prior to the assignation to them of value and meaning by a perceiving subject? As a matter of fact they are, says Gibson, before immediately qualifying himself. Well, they are ‘in a sense’. And actually, he goes on to say, that sense rests on the entirely inadequate foundation of a subject–object dualism! For the affordances of things are their values and meanings, and what is more, they can be directly perceived (ibid.: 127).

I believe the root source of this contradiction can be found in the very assumption that the environment comprises a world furnished with objects. For Gibson this is axiomatic. Without objects, he surmises, an environment would be virtually uninhabitable (ibid.: 78). In practice, however, inhabitants find themselves in a world cluttered with objects of all sorts, like householders in an attic or actors on a stage-set. It is all this furniture that makes it possible for them to get on with the activities of life. From the analogy of the environment to furnished accommodation is drawn the classical ecological concept of the niche, a little corner of the world to which an organism has fitted itself through a process of adaptation. Just as, literally, an alcove in the wall provides the perfect place to display a vase of the right size and proportion, so metaphorically, every kind of creature has evolved to fill its particular niche in the environment. A corollary of the metaphor, however, is that as with the dimensions of alcove, the niche is specified by essential properties of the environment, irrespective of the presence and functioning of the organism. Take away the vase, and the alcove is still there; remove the organism and the niche remains. As ‘a set of affordances’ (ibid.: 128), the niche is already laid out in the furnishing of the environment before any
creature arrives to fill it. It sets the conditions to which any occupant must adapt. Moreover
every object of furniture, Gibson insists, ‘offers what it does because of what it is’ (ibid.: 139),
whether or not any animal is present to detect it. As properties of the furnished world, the
affordances of the environment are there to be discovered and put to use by any creature
equipped to do so.

In short, far from inhering in a relation between a living being and its environment, and
pointing both ways, it now seems that the affordance rests unequivocally on the side of the
environment and that it points in just one way, towards any potential inhabitant. Having
begun by assuring us that ‘an environment implies an animal (or at least an organism) to
be surrounded’, Gibson goes on to assert, with equal assurance but quite to the contrary,
that ‘the environment does not depend on the organism for its existence’ (ibid.: 8, 129, my
emphasis). Indeed he is at pains to distinguish his view of the niche from ‘what some animal
psychologists have called the phenomenal environment of the species’, and particularly from
any suggestion that such an environment might amount to a ‘subjective world’ in which it is
supposed to live (ibid.: 129). Though he does not name names, he could have been referring
to the works, among others, of Jakob von Uexküll.

Jakob von Uexküll and the concept of Umwelt

Much as Gibson was later to do, von Uexküll set out to understand how the world exists for
the animal, given its own particular morphology, sensibilities and action potentials. No more
than Gibson, could he accept that animals live in meaningless worlds. One could hardly
imagine an animal farther removed from human beings in structure, size and complexity –
though not, irritatingly, in proximity – than the humble tick. Yet even for the tick, von
Uexküll showed, the environment is imbued with meaning, albeit of only three kinds
(Uexküll 1992: 324–325). The first is carried in the smell of sweat common to mammals,
the second in characteristics of the host’s skin and hair, and the third in the temperature of
warm blood. The significance of each lies in the action it prompts: falling (so as to land on
the host), burrowing (on a relatively hairless patch of skin) and sucking (from blood vessels
close to the surface). For von Uexküll as for Gibson, there is meaning in the animal’s world
not because it is capable of fashioning an internal representation of an external state of affairs
but because its action in the world is so closely and intimately attuned to its perception
(ibid.: 320).

That is where the similarity ends, however. For whereas Gibsonian affordances are
supposed to exist as the inherent potentials of environmental objects, regardless of whether
they are attended to or put to use by any organism, von Uexküll maintained that what he
called the ‘quality’ (Ton) of a thing, by virtue of which it has significance for a particular
creature, is not intrinsic to the thing itself but is acquired by virtue of its having been drawn
into that creature’s activity (Uexküll 1982: 27–29). The same stone, for example, may
function as shelter for the crab that hides beneath it, as an anvil for the thrush that uses it
to break open snail shells, and as a missile for an angry human to hurl at an adversary. In
Gibson’s terms, shelter, anvil and missile are all properties of the stone that are available to
be taken up. For von Uexküll, by contrast, they are qualities that are bestowed upon the stone
by the need of the creature in question and in the very act of attending to it. The stone only
becomes a shelter when the crab scuttles under it, an anvil when the thrush smashes the shell
against it, and a missile when the man picks it up to throw. Outside of these activities it was
none of these things. Thus, far from fitting into a given corner of the world (a niche), it is the animal that fits the world to itself by ascribing functional qualities to the things it encounters and thereby integrating them into a coherent system of its own (Uexküll 1992: 360–361; see Ingold 1992: 42). To denote this system – the world as it is constituted within the animal’s circuit of perception and action – von Uexküll used the term Umwelt (1992: 320). The life of every creature, von Uexküll thought, is so wrapped up in its own Umwelt that no other worlds are accessible to it. It is as though each one were floating in its own particular ‘bubble’ of reality (ibid.: 338–339). Though the perceptual and effector organs of different creatures may be perfectly attuned, neither can access what is real for the other. For example the threads of the spider’s web, as von Uexküll elegantly showed (1982: 42), are precisely proportioned such that they evade the visual sensors of the fly, yet the spider knows absolutely nothing of the fly’s world.

We have seen that the niche, as a set of affordances, is on the side of the environment and points towards the organism. The Umwelt, it now seems, is just the opposite: it is on the side of the organism pointing towards the environment. Remove the organism, and the Umwelt disappears with it. What then remains? A man may throw a stone in anger, but in more measured circumstances he might ponder its possible uses as a paperweight, pendulum bob or hammer. Whilst he holds the stone in his hand and deliberates on the matter it is not yet any of these things. It is merely an object of a certain shape, size and composition, with certain properties of hardness and durability, which could, in principle, find an almost unlimited range of uses. Regarded as such, the stone is an example of what von Uexküll (ibid.: 27) called ‘neutral objects’. No animal, however, or at least no non-human animal, is in a position to observe the environment from such a standpoint of neutrality. To live, it must already be immersed in its surroundings and committed to the relationships this entails. And in these relationships, the neutrality of objects is inevitably compromised. The thrush, for example, does not first perceive the stone as a stone, and then wonder what to do with it, any more than it wonders what to do with its beak. Rather, using both stone and beak, it smashes shells. But what of the human? In a paper published over twenty years ago, I argued that humans are different. Uniquely among animals, it seemed to me, human beings are capable of making their own life activity the object of their attention, and thus of seeing things as they are, as a condition for deliberating about the alternative uses to which they might be put (Ingold 1989: 504–505). For this reason I took exception to the conventional English translation of the German Umwelt as ‘subjective universe’ (e.g., Uexküll 1982: 31). For human beings alone, I thought, can exist as subjects confronting a world of neutral objects. In that very act of standing back and reflecting on the conditions of existence, the human Umwelt becomes an Innenwelt – literally a ‘subjective universe’ – an organisation of representations, internal to the mind, which lend meaning to the raw material of experience.

**Martin Heidegger on life in the open**

It was not until two or three years later, guided by Hubert Dreyfus (1991: 60–87), that I began to engage with the philosophy of Martin Heidegger, and specifically with what he has to say about the ways in which human beings and non-human animals relate to the world around them. Heidegger distinguishes between two ways in which things can show up to a being that is active in the world: Dreyfus renders them as *availableness* and *occurrentness*. To the skilled practitioner absorbed in an activity, the things he uses are available
and ready to hand. So long as the activity flows smoothly, their objectness melts into the flow. As the practitioner's awareness becomes one with the activity, he or she does not attend to the objects as such. Hammering, the carpenter does not inspect the hammer; fiddling, the musician does not subject the violin to scrutiny. Only when the instrument fails to respond to the demands of the moment does the practitioner run hard up against it, in its brute facticity. The thing, at this point, is no longer available but occurrent. ‘What is this?’ curses the carpenter as the hammer misses its mark; or the musician when the violin goes out of tune or a string snaps. This is not the kind of question that a non-human, without the gift of language, would ever ask. In this sense, humans alone are haunted by the spectre of the loss of meaning that occurs when action fails. It is not in their construction of meaningful worlds, then, that the singularity of human beings resides, but rather in their occasional glimpses of a world rendered meaningless by its dissociation from action.

Should we infer, from this, that so long as the human practitioner is absorbed without interruption in the task at hand, there is little or nothing to distinguish his or her perception from that of the animal in its Umwelt? This was certainly the drift of my own thinking. But it was not so for Heidegger. In a course of lectures delivered in 1929–1930, but which lay unpublished until 1983, Heidegger set out his unequivocal stance on the question of human uniqueness in direct response to the work of von Uexküll, which he much admired. The animal in its Umwelt, he argued, may be open to its environment, but it is closed to the world. The human practitioner is unique in inhabiting the world of the open. To explain what he meant, Heidegger asked his listeners to compare an inanimate object like a stone, an animal and a human being. How do they differ? His answer took the form of three theses: ‘The stone … is worldless; the animal is poor in world; man is world-forming’ (Heidegger 1995: 263). The stone has no world since it lacks a perceptual apparatus. Suppose that we find a stone lying on our path. ‘The stone lies upon the earth’, observed Heidegger, ‘but does not touch it.’ Though it crops up amidst a host of other things, everything around remains inaccessible to the stone itself (ibid.: 197). There is, in short, no reality for the stone. What, then, of the animal? Why should its world have the character of poverty? If it is by the potential loss of meaning, and not by its contribution, that humans distinguish themselves from animals, then how come that human worlds are nevertheless more richly endowed?

The world of the animal is poor, Heidegger argued, because it is captivated (ibid.: 239). But as Giorgio Agamben has shown through a detailed commentary on Heidegger’s text, there are two sides to captivation (Agamben 2004: 49–56). On the one hand, although the animal is encircled within what Heidegger called a ‘disinhibiting ring’, precisely equivalent to the Umwelt, this encirclement is absolutely not an encapsulation (Heidegger 1995: 255, 263). For it is thanks to its ring of disinhibitors that the instinctual drives of the animal can be released and find expression in the presence of appropriate stimuli. The disinhibiting ring is like a ring of keys, each of which opens a door through which the life of the animal spills out into its surroundings. But the animal knows nothing of this. It completely fails to apprehend the things with which its life is mingled, as things. For the animal, driven to behave in the way it does, there is no possibility of apprehension (ibid.: 247). Thus the very same encircling ring that opens the animal to its environment also ensures that the world as we humans know it – infinitely extendable in range and possibility – is forever withheld from it (ibid.: 193). This is the other side of captivation. The animal is poor in world, for Heidegger, because it lacks access to the things and beings that comprise it.
Yet if the closure entailed in the animal’s captivation implies an openness to its environment so, conversely, the world of the human practitioner can be open only because it can appear closed in a way that the animal’s can never do. Since the world cannot be disclosed to the animal there is no possibility, either, of its being closed off (ibid.: 248). For human beings, by contrast, the very opening of the world, the disclosure of things for what they are, is predicated upon an initial closure. Unlike the animal in its captivation, which finds itself taken in an environmental embrace that is as passionate as it is overwhelming, the human being stands before the world, as a domain of things-in-themselves, and has of necessity to take a stance towards it. Here, concludes Heidegger,

we see … the essential contrast between the animal’s being open and the world-openness of man. Man’s being open is a being held toward … whereas the animal’s being open is a being taken by … and thereby a being absorbed in its encircling ring.

(ibid.: 343)

The contrast between these contrary understandings of openness and closure is epitomised in what Heidegger has to say, elsewhere, about hands and handiwork. ‘The hand exists as a hand’, he declares in his lectures on Parmenides, ‘only where there is disclosure and concealment’ (1982: 80). No animal, he thinks, can have a hand or be handy. Animals can have paws, claws and talons, but these are mere conduits for its behaviour. The hand, by contrast, is an instrument of world forming. It is a hand precisely because it is not tied to any particular way of working, but delivers an engagement that is both thoughtful and reflexive, guided by consideration. It is, in short, an instrument not of behaviour but of comportment (Elden 2006: 280; see also Heidegger 1992: 84; 1995: 237).

The peculiar boundedness of Heidegger’s notion of the ‘open’ is evident in his recurrent metaphor of the clearing, imagined as a space for dwelling that is opened up (that is, disclosed) from the surrounding forest. Within this space, human existence is reined in and contained, while other creatures meld into the surroundings from which they are deemed incapable of distinguishing themselves, and to which they are therefore unable to relate as such (Agamben 2004: 59; Harrison 2007: 634). To be sure, Heidegger is anxious to avoid placing any hierarchical evaluation on the difference between the animal’s poverty in world and the human capacity for world formation (Heidegger 1995: 194). That he should characterise the world in terms of what the human possesses and the animal lacks reveals, nevertheless, where his priorities lie. Poor animals (Elden 2006: 274)! Indeed, in his stress on human uniqueness, Heidegger seems to arrive at a picture of the inhabitant that is, in every respect, the precise inverse of Gibson’s. Recall Gibson’s contention that what he calls the open environment – realised in the limiting case as a perfectly level desert stretching to the horizon under an empty sky – would be practically uninhabitable (Gibson 1979: 33, 78). To create a space for dwelling the open must be furnished with objects. Yet these objects, affording what they do because of what they are, remain indifferent to the presence of the inhabitant. They are supposed to comprise, in themselves, a meaningful world, into which the inhabitant arrives as a kind of interloper, probing this niche and that and picking up their affordances (ibid: 139). For Heidegger, to the contrary, the space of dwelling is one that the inhabitant has formed around himself by clearing the clutter that would otherwise threaten to overwhelm his existence. The world is rendered habitable not as it is for Gibson, by its partial enclosure in the form of a niche, but by its partial disclosure in the form of a clearing.
Gilles Deleuze and life on the line

Can there be any escape from this shuttling back and forth between enclosure and disclosure, between an ecology of the real and a phenomenology of experience? So long as we suppose that life is fully encompassed in the relations between one thing and another – between the animal and its environment or the being and its world – we are bound to have to begin with a separation, siding either with the environment vis-à-vis its inhabitants or with the being vis-à-vis its world. A more radical alternative, however, would be to reverse Heidegger’s priorities: that is, to celebrate the openness inherent in the animal’s very captivation by its environment. This is the openness of a life that will not be contained, that overflows any boundaries that might be thrown around it, threading its way like the roots and runners of a rhizome through whatever clefts and fissures leave room for growth and movement (see Chapter 9, p. 124). Once again, we can take our cue from von Uexküll, who compares the world of nature to polyphonic music, in which the life of every creature is equivalent to a melody in counterpoint (Uexküll 1982: 52–54). In the case of musical performance, we may speak of the connection between the player and his instrument, say a violin. Each has a bearing on the other. But the line of the melody does not lie in this connection. On the contrary, it is a line that continually issues forth from that place, in the midst of things, where the fiddler and the violin are conjoined in a passionate embrace. So too, the lifelines of organisms issue from the sites of their symbiotic connection, but in a direction that runs not from one to the other but forever in between, as the river flows between its banks in a direction orthogonal to their transverse connection. The life of the spider thus runs in counterpoint to that of the fly: to the melodic line of the first, the second figures as a refrain (ibid.: 68). To adopt this view is to go with the grain of another of the twentieth century’s most influential philosophers, Gilles Deleuze.

Life, for Deleuze, is lived not within a perimeter but along lines. He calls them ‘lines of flight’, or sometimes ‘lines of becoming’. Such lines prise an opening, even as they bind the animal with its world. Every species, indeed every individual has its own particular line, or rather bundle of lines (Deleuze and Guattari 2004: 224–225). Critically, however, these lines do not connect:

A line of becoming is not defined by the points it connects, or by the points that compose it; on the contrary, it passes between points, it comes up through the middle, it runs … transversally to the localizable relation to distant or contiguous points. A point is always a point of origin. But a line of becoming has neither beginning nor end … [It] has only a middle … A becoming is always in the middle: one can only get it by the middle. A becoming is neither one nor two, nor the relation of the two; it is the in-between, the … line of flight … running perpendicular to both.

(ibid.: 323, see also Figure 6.1)

Thus in life as in music or painting, in the movement of becoming – the growth of the organism, the unfolding of the melody, the motion of the brush and its trace – points are not joined so much as swept aside and rendered indiscernible by the current as it flows through. So it is that the line does not link the spider and the fly, or the wasp and the orchid, but ‘passes between them, carrying them away in a shared proximity in which the discernibility of points disappears’ (ibid.: 324). Life is open-ended: its impulse is not to reach a terminus but to keep on going. The spider spinning its web or the musician launching into the melody...
The meshwork

‘hazards an improvisation’. But to improvise, Deleuze continues, is ‘to join with the World, or meld with it. One ventures from home on the thread of a tune’ (ibid.: 343–344).

If the individual organism is to be understood as a bundle of lines, or what Deleuze calls a *haecceity* (ibid.: 290), then what becomes of our original concept of ‘the environment’? Let us imagine ourselves, as did Charles Darwin in *The Origin of Species*, standing before ‘the plants and bushes clothing an entangled bank’ (Darwin 1950: 64). Observe how the fibrous bundles comprising every plant and bush are entwined with one another so as to form a dense mat of vegetation. On the bank, ‘the environment’ reappears as an immense tangle of lines. Precisely such a view was advanced by geographer Torsten Hägerstrand, who imagined every constituent of the environment – including ‘humans, plants, animals and things all at once’ – as having a continuous trajectory of becoming. ‘Seen from within’, wrote Hägerstrand, ‘one could think of the tips of trajectories as sometimes being pushed forward by forces behind and besides and sometimes having eyes looking around and arms reaching out, at every moment asking “what shall I do next”? ’ The entwining of these ever-extending trajectories, in Hägerstrand’s terms, comprises the texture of the world – the ‘big tapestry of Nature which history is weaving’ (Hägerstrand 1976: 332). In this tapestry there are no insides or outsides, no enclosures or disclosures, only openings and ways through. Like Darwin’s entangled bank, Hägerstrand’s tapestry is a field not of interconnected points but of interwoven lines, not a network but a meshwork.

Bruno Latour and the actor network

I have borrowed the term ‘meshwork’ from the philosophy of Henri Lefebvre (1991: 117–118). There is something in common, Lefebvre observes, between the way in which words are inscribed upon a page of writing, and the way in which the movements and rhythms of human and non-human activity are registered in lived space, but only if we think of writing not as a verbal composition but as a tissue of lines – not as *text* but as *texture*. ‘Practical activity writes on nature’, he remarks, ‘in a scrawling hand.’ Think of the reticular trails left by people and animals as they go about their business around the house, village and town. Caught up in these multiple entanglements, every monument or building, viewed in its context and surroundings, is more ‘archi-textural’ than architectural (ibid.: 118). It, too,
despite its apparent solidity and permanence, is a haecceity, experienced in the opening and occlusion of vistas as inhabitants enter, leave or proceed from one room to another (see Chapter 12, p. 146). Like the environment of which it forms a part, the building neither encloses the inhabitant, nor is it disclosed from within. ‘The significant division’, as I have argued elsewhere, ‘is not so much between inside and outside, as between the movement “from the inside going out”, and “from the outside going in”’ (Ingold 2004: 239). As the life of inhabitants overflows into gardens and streets, fields and forests, so the world pours into the building, giving rise to characteristic echoes of reverberation and patterns of light and shade. It is in these flows and counter-flows, winding through or amidst without beginning or end, and not as connected entities bounded either from within or without, that living beings are instantiated in the world.

The critical distinction between the lines of flow of the meshwork and the lines of connection of the network (see Chapter 5, p. 70) has been persistently obscured, above all in the recent elaboration of what has come to be known, rather unfortunately, as ‘actor-network theory’. The theory has its roots not in thinking about the environment but in the sociological study of science and technology. In this latter field, much of its appeal comes from its promise to describe interactions among people (such as scientists and engineers) and the objects with which they deal (such as in the laboratory) in a way that does not concentrate mind or agency in human hands, but rather takes it to be distributed around all the elements that are connected or mutually implicated in a field of action. The term ‘actor-network’, however, first entered the Anglophone literature as a translation from the French acteur réseau. And as one of its leading proponents – Bruno Latour – has observed in hindsight, the translation gave it a significance that was never intended. In popular usage, inflected by innovations in information and communications technology, the defining attribute of the network is connectivity: ‘transport without deformation, an instantaneous, unmediated access to every piece of information’ (Latour 1999a: 15). But réseau can refer just as well to netting as to network – to woven fabric, the tracery of lace, the plexus of the nervous system or the web of the spider. The lines of the spider’s web, for example, quite unlike those of the communications network, do not connect points or join things up. Secreted from the body of the spider as it moves, they are the lines along which it acts and perceives (see Chapter 7).

The acteur réseau was intended by its originators (if not by those who have been beguiled by its translation as ‘network’) to be comprised of just such lines of becoming. Their inspiration came, in large measure, from the philosophy of Deleuze. As we have already seen, with acknowledgement to Deleuze, the line of the web does not link the spider to the fly, neither does the latter’s ‘line of flight’ link it to the spider. Ensconced at the centre of its web, the spider knows that a fly has landed somewhere on the outer margins, as it sends vibrations down the threads that are picked up by the spider’s super-sensitive, spindly legs. And it can then run along the lines of the web to retrieve its prey. Thus the thread-lines of the web lay down the conditions of possibility for the spider to interact with the fly. But they are not themselves lines of interaction. If these lines are relations, then they are relations not between but along. Of course, as with the spider, the lives of organisms generally extend along not one but multiple lines, knotted together at the centre but trailing innumerable ‘loose ends’ at the periphery. Thus each should be pictured, as Latour has latterly suggested, in the shape of a star ‘with a center surrounded by many radiating lines, with all sorts of tiny conduits leading to and fro’ (Latour 2005: 177). No longer a self-contained object like a ball that can
propel itself from place to place, the organism now appears as an ever ramifying web of lines of growth. This is the Deleuzeian haecceity, famously compared to a rhizome (Deleuze and Guattari 2004: 290). I personally prefer the image of the fungal mycelium (Ingold 2003: 302–306). Indeed as the mycologist Alan Rayner (1997) has suggested, the whole of biology would be different had it taken the mycelium as the prototypical exemplar of the living organism. For it could not, then, have been built upon the presumption that life is contained within the absolute bounds of fixed forms. We would rather have a biology that starts from the fluid character of the life process, wherein boundaries are sustained only thanks to the continual flow of materials across them (see also Pearson 1999: 166–168).

Ending with fluid space

In the science of mind, the absoluteness of the boundary between organism and environment has not gone unquestioned. Thus in a lecture delivered in 1970 the anthropologist Gregory Bateson declared that ‘the mental world – the mind – the world of information processing – is not limited by the skin’ (Bateson 1973: 429). His point was that the processing loops involved in perception and action are not interior to the creature whose mind we are talking about, whether human or non-human, nor can that creature’s activity be understood as the merely mechanical output of one or more cognitive devices located in the head. Rather, such activity has to be understood as one aspect of the unfolding of a total system of relations comprised by the creature’s embodied presence in a specific environment. Much more recently, in his book Being There, Andy Clark has made the same point. The mind, Clark tells us, is a ‘leaky organ’ that refuses to be confined within the skull but mingles shamelessly with the body and the world in the conduct of its operations (Clark 1997: 53). More strictly, he should have said that the skull is leaky, whereas the mind is what leaks! From Bateson to Clark, however, there remains a presumption that whereas the mind leaks, the organism does not. Whatever we might say about the mind, and about its propensity to mingle with the world along the multiple pathways of sensory engagement with its surroundings, the organism at least remains confined within the envelope of the body. This presumption, along with the division between mental and organic activity on which it rests, seems to me to be unsustainable. For how can there be any sensory engagement that does not also involve a flow of materials within a wider field of forces? For this reason I would like to return to Bateson’s declaration and take it one step further. I want to suggest that as a nexus of life and growth within a meshwork of relations, the organism is not limited by the skin. It, too, leaks.

Another way to express this is to say that organisms inhabit what Annemarie Mol and John Law (1994) have called ‘fluid space’. In fluid space there are no well-defined objects or entities. There are rather substances that flow, mix and mutate, sometimes congealing into more or less ephemeral forms that can nevertheless dissolve or re-form without breach of continuity (ibid.: 659–664). Every line – every relation – in fluid space is a path of flow, like the riverbed or the veins and capillaries of the body. As the sanguinary image suggests, the living organism is not just one but a whole bundle of such lines. In a quite material sense, lines are what organisms are made of. Indeed anatomists have always known this as they have spoken of bodily ‘tissues’ (Ingold 2007a: 61). For the tissue is a texture formed of a myriad of fine threads tightly interlaced, presenting all the appearance, to a casual observer, of a coherent, continuous surface. To the anatomical gaze, however, the organic tissue becomes – as J. Arthur Thomson wrote in 1911 – ‘in a quite remarkable way translucent’, resolving
into its constituent threads of nerve, muscle, blood vessels and so on (Thomson 1911: 27; see Figure 6.2). What is the nervous system, asked the philosopher Henri Bergson, if not ‘an enormous number of threads which stretch from the periphery to the centre, and from the centre to the periphery’ (Bergson 1991: 45)? Indeed the skin is not an impermeable boundary but a permeable zone of intermingling and admixture, where traces can reappear as threads and vice versa (Ingold 2007a: 59–61). Thus, as we saw in Chapter 5 (p. 70), instead of thinking of organisms as entangled in relations, we should regard every living thing as itself an entanglement.

To appreciate the distance we have come, let me return in conclusion to Gibson. Recall that for the organism to inhabit the open, in his view, it must find a semi-enclosure—a niche—comprised of objects. It is by their outward surfaces, according to Gibson, where more or less solid substances come up against the volatile medium, that objects are revealed to perception. If the substance of an object is dissolved or evaporates into the medium, then its surface disappears, and the object with it (Gibson 1979: 22–23). Thus the very objectness of things lies in the separation and immiscibility of substance and medium. Remove every object, however, and a surface still remains— for Gibson the most fundamental surface of all—namely the ground, marking the interface between the substance of the earth below and the gaseous medium of the sky above (ibid.: 10, 33). Has the earth, then, turned its back on the sky? If it had, then as Gibson correctly surmised, no life would be possible. The open could not be inhabited. Our conclusion, to the contrary, is that the open can be inhabited precisely because, wherever life is going on, the division of earth and sky gives way to flows and counter-flows of materials. As I shall show in Chapter 9, what we call the ground is not really a coherent surface at all but—just like the skin—a zone in which the air and moisture of the sky bind with substances whose source lies in the earth in the germination and growth of living organisms.

Thus, far from inhabiting a sealed ground furnished with objects, the animal lives and breathes in a world of earth and sky—or becoming earth and becoming sky—where to

FIGURE 6.2 ““Loose” ligament tissue of the rat’, reproduced from an unspecified source in Wassily Kandinsky’s essay of 1926, Point and Line to Plane (Figure 74).
The meshwork perceive is to align one’s movements in counterpoint to the modulations of day and night, sunlight and shade, wind and weather. It is to feel the currents of air as it infuses the body, and the textures of the earth beneath one’s feet. In the open world, to leave the last word to Deleuze, ‘there is no line separating earth and sky; there is no intermediate distance, no perspective or contour, visibility is limited; and yet there is an extraordinarily fine topology that relies not on points or objects but rather on haecceities, on sets of relations (winds, undulations of snow or sand, the song of the sand or the creaking of the ice, the tactile qualities of both)’ (Deleuze and Guattari 2004: 421). These haecceities are not what we perceive, since in the world of fluid space there are no objects of perception. They are rather what we perceive with. In short, to perceive the environment is not to look back on the things to be found in it, or to discern their congealed shapes and layouts, but to join with them in the material flows and movements contributing to their – and our – ongoing formation.
Deep in the woods, amidst the undergrowth and detritus of a forest floor, two distinguished arthropods – renowned in the animal kingdom for their ingenuity and technical accomplishments – have struck up a conversation. One is ANT (Figure 7.1), the other is SPIDER (Figure 7.2). Both being philosophically inclined, their concern is to understand the world and their place in it. On this particular occasion, it is ANT’s turn to open the debate.

‘We ants’, he declares, ‘are not isolated individuals. Our brains may be no bigger than pinheads, yet we can achieve great things. Our nests are monumental mounds, and our roads are highways through the forest, overrunning everything in their path. We can accomplish these feats because we collaborate. We live together in colonies, many thousand strong, sharing our food and work. In a word, we are the most social of insects.’

SPIDER, more solitary by nature, finds the idea of life in a colony hard to grasp. She admits that she would be more inclined to eat others of her kind than to work with them. Curious to know what it means to be social, she resolves to press ANT on the issue. ‘In the course of your activities’, she remarks, ‘you have to deal with all sorts of things. I have seen you dragging worms and bugs that you have killed for food to your nests, along with building materials like twigs, pine needles and leaves, often many times your body size. I
have seen you “touching up” aphids and licking the honeydew from their bodies. And I have seen you picking up and carrying around the larvae of your own kind. Tell me, do you have social relations with these things, or only with mature members of the colony like yourself?”

‘Now there, my dear SPIDER’, replies ANT, ‘you have touched on an issue that has been the source of some controversy in the formicoid world, and I have to confess that my own views on the matter are somewhat unorthodox. To cut a long story short, there have up to now been two schools of thought. According to one school, we should think of the colony as a functioning totality that is more than the sum of its parts – a sort of super-organism – within which the life of every individual is entirely given over to the greater good of the collectivity. According to the other school, what we call “the colony” does not correspond to any real, concrete entity. We merely use the term as shorthand for what, in reality, is a vast aggregation of individuals, each driven by those basic instincts with which it has been innately endowed. My own view, however, is that we should characterise the colony, in the first place, in terms not of its membership or composition but of what is actually going on there. Every colony is abuzz with activity. And if we follow the lines of activity, we find that they can be traced back neither to a single, collective super-organism nor to a plurality of individual organisms. Rather, to trace the lines of activity is to describe a vast network, in which any individual appears as but a particular node. Every ant in the colony is part of the action and carries it forward in its own way; it is, if you will, an act-ant.’

‘So if you want to assign responsibility for what is going on’, interjects SPIDER, ‘you could not lay it at the door of the individual or the collectivity. It is rather spread around the entire network.’

ANT waves his antennae in approval. ‘Exactly so. That’s why I say that the individual act-ant is not an agent. Rather, agency – that is, what makes things happen – is distributed throughout the network.’

‘That is all very well’, retorts SPIDER, ‘but you have still not answered my original question. You speak of the colony as a network of act-ants. But can the network also include non-ants? Can non-ants also have social lives?’

‘Absolutely’, ANT continues. ‘Anything can belong to the network, whether ant or non-ant. It is on precisely this point that I take issue with my colleagues. They seem to think there
is something about being an ant – some essential anthood – that sets them apart from other
creatures, in a separate world of anture as distinct from the material world of nature in which
the existence of all other creatures is confined. Social relations, they claim, are not natural
but antural. But the world I inhabit comprises both act-ants and non-ants, including such
things as pine needles, aphids and larvae. I insist that these things are not just passive objects.
I am bound up in relations with them, as I am with my fellow ants. They, too, are part of the
network. And they are caught up in it just as flies, my dear spider, are caught up in your web.’

‘But there you are surely wrong’, exclaims SPIDER. ‘The lines of my web are not at
all like those of your network. In your world there are just bits and pieces of diverse kinds
that are brought together or assembled so as to make things happen. Every “relation” in the
network, then, is a connection between one thing and another. As such, the relation has no
material presence. For the materiality of the world, in your view, is fully comprehended
in the things connected. The lines of my web, to the contrary, are themselves spun from
materials exuded from my own body, and are laid down as I move about. You could even
say that they are an extension of my very being as it trails into the environment – they
comprise, if you will, my “wideware”! They are the lines along which I live, and conduct
my perception and action in the world. For example, I know when a fly has landed in the
web because I can feel the vibrations in the lines through my spindly legs, and it is along
these same lines that I run to retrieve it. But the lines of my web do not connect me to the
fly. Rather, they are already threaded before the fly arrives, and set up through their material
presence the conditions of entrapment under which such a connection can potentially be
established.’

SPIDER’s account reminds ANT of an incident that took place during his winged
mating flight, when he very nearly became caught in a spider’s trap. It was touch and go, but
after a sticky experience he had eventually managed to break free. Was it the web, however,
or the spider that had ensnared him? Wondering about this, ANT comes to the conclusion
that ‘it was, of course, both the spider and the web, or what we might regard as a hybrid
entity, the “spider–web”, formed by their conjunction’. But there is more, as ANT goes
on to explain. ‘The web cannot function as a trap unless it is supported. In fact it was hung
from lines attached to the twigs of bushes and to grass stems. So it was the way in which the
spider, the web, the stems and the bushes all came together in the network, at that particular
moment, that led to my nearly ending up as the spider’s dinner.’

On hearing the word ‘hybrid’, SPIDER’s legs begin to twitch nervously. She dislikes
the term, and has reservations about the way it has been bandied about by ANT and his
confabulators. ‘Your talk of hybridity’, she responds tetchily, ‘entirely misses the point. You
imagine a world of entities – spider, web, stems, twigs and so on – which are assembled to
comprise the necessary and sufficient conditions for an event to happen. And you claim
that the agency that “causes” this event is distributed throughout the constituents of the
assemblage.?’ My point, however, is that the web is not an entity. That is to say, it is not a closed-
in, self-contained object that is set over against other objects with which it may then be
juxtaposed or conjoined. It is rather a bundle or tissue of strands, tightly drawn together
here but trailing loose ends there, which tangle with other strands from other bundles. For
the twigs or stems to which I attach these trailing ends are themselves but the visible tips of
complex underground root systems. Every plant, too, is a living tissue of lines. And so, indeed,
am I. It is as though my body were formed through knotting together threads of life that run
out through my many legs into the web and thence to the wider environment. The world,
The meshwork for me, is not an assemblage of bits and pieces but a tangle of threads and pathways. Let us call it a *meshwork* (see Figure 7.3), so as to distinguish it from your *network*. My claim, then, is that action is not the result of an agency that is distributed around the network, but rather emerges from the interplay of forces that are conducted along the lines of the meshwork.

As ANT and SPIDER are conversing on the forest floor – surrounded by what ANT (the network builder) perceives as an assortment of heterogeneous objects and what SPIDER (the web weaver) perceives as a tissue of interlaced threads – something else is going on in the air above their heads. A pair of butterflies are rapt in a courtly dance. ‘Observe’, says ANT, ‘how in its fluttering, each butterfly responds to the movements of the other. We might even call it a “dance of agency”’. Clearly, the butterflies are interacting in the air, just as we ants interact on the ground in the acrobatics of our collaboration.

‘But have you’, asks SPIDER, ‘given any thought to the air itself? The butterfly’s flight is made possible thanks to air currents and vortices partly set up by the movement of its wings. Similarly, the fish in the river is able to swim, sometimes at remarkable speed, because of the way it creates eddies and vortices in the water through the swishing of its tail and fins. But what sense would it make to say that the air, in the first case, is a participant in the network, with which the butterflies dance as they do with one another; or, in the second case, that the fish dances with water as it might with other fish in the shoal? Indeed it would make no sense at all. Air and water are not entities that act. They are material media in which living things are immersed, and are experienced by way of their currents, forces and pressure gradients. True, it is not the butterfly alone that flies but butterfly-in-air, and not the fish alone that swims but fish-in-water. But that no more makes the butterfly a fly-air

![FIGURE 7.3](image_url) The meshwork (spider/web/twig) and the network of relations between spider, web and twig
When ANT meets SPIDER

hybrid than it makes the fish a fish-water hybrid. It is simply to recognise that for things to interact they must be immersed in a kind of force field set up by the currents of the media that surround them. Cut out from these currents – that is, reduced to objects – they would be dead. Having deadened the meshwork by cutting its lines of force, thus breaking it into a thousand pieces, you cannot pretend to bring it back to life by sprinkling a magical dust of “agency” around the fragments. If it is to live, then the butterfly must be returned to the air and the fish to the water.

‘And I’, SPIDER goes on, ‘must return to my web. For I have to say that what air is for the butterfly and water is for the fish, my web is for me. I cannot fly or swim, but I can weave a web and exploit its properties of stickiness, tensile strength and so on to run around and catch flies. I may dance the tarantella with the fly that alights on my web, but the web itself is not a dancing partner. It is not an object that I interact with, but the ground upon which the possibility of interaction is based. The web, in short, is the very condition of my agency. But it is not, in itself, an agent.’

‘That, if I may say so’, interjects ANT, ‘is a very arachnocentric viewpoint. Presumably, by your same argument, if you were a fly you could also claim to be an agent and, if you were an ant like me, you could claim to be an agent too. How many legs, I wonder, do you need to qualify as an agent: six, eight, a hundred? Our mutual acquaintance the centipede would indeed do very well. With so many legs he must be a truly powerful agent.’

‘You jest of course, my dear ANT’, responds SPIDER. ‘Nevertheless to your question – how many legs do you need to be an agent? – I would answer: at least four! For although I would be prepared to admit to the agency of our four-footed friends, the rat and the mouse, I would draw the line at bipedal humans. You may be an agent from your formicoid perspective, and I from my arachnid one, but from the perspective by which humans distinguish themselves from all other creatures, it is impossible to see how they could exercise any agency at all. On one occasion I dangled inconspicuously from the ceiling of one of their so-called “classrooms”, and overheard a human philosopher lecturing to others of his number.

“I am a human subject”, the man intoned. “I know, therefore I am. I know, and am, because I have a mind. That is what makes me human. And it is this, too, that enables me to act. Of course I have a body too, like every other creature. The spider has a body; so does the ant. But the spider and the ant are all body; there is no more to them than that. Though we may observe their behaviour, they cannot act. But I am not my body. I am a body plus. It is by the measure that I am more than my body that my humanity – along with the scope of my action – is defined.”

“Well”, thought I silently to myself, as I swung from the end of my thread, “if that’s where you imagine the essence of your humanity lies, then it is certainly not to be found in what you humans do. What you have been talking about is intelligence, a cognitive capacity to work things out in advance, in the head, prior to their implementation in the world. But intelligence is one thing, agency quite another. It is a serious mistake to confuse the two”. And I remembered the story of the apocryphal centipede who, when asked how he managed to coordinate the movements of his hundred legs, found himself paralysed and starved to death. So long as he had acted unthinkingly, leaving his legs to look after themselves, there had been no problem. But as soon as he stopped to think intelligently about what he did,
The meshwork

he could no longer act. His agency was thwarted. More generally, a creature that could do nothing that had not been fully thought out in advance could never, in practice, do anything at all.’

‘We all know about the arrogance and stupidity of humans’, laughs ANT in response, ‘especially the philosophers among them who have nothing else to do in life than to think. If we could only reduce them in scale and put them to work in one of our nests, they would learn a thing or two! They would soon discover, as I have explained already, that agency is not exclusive either to ants or to non-ants but is distributed throughout the network formed by their collaboration. We need, in short, to establish a principle of symmetry, by which neither side of the ant/non-ant dichotomy is privileged over the other.’

‘I do not want to accord a special privilege to ants or to spiders’, responds SPIDER, ‘let alone to human beings. Yet I cannot accept your principle of symmetry. The problem lies in your blanket category of the “non-ant”, which includes everything from grains of sand and dead leaf matter to aphids and butterflies – and even humans! Our concept of agency must make allowance for the real complexity of living organisms, as opposed to inert matter. It is simply absurd to place a grain of sand and an aphid on the scales of a balance and to claim that they are equivalent. They may weigh the same amount, but in terms of complexity they are poles apart. The key difference is that the aphid, animal that it is, has a nervous system – just as you and I do. When I crouch at the centre of my web, I am all a-quiver, just like the leaf of a tree in the summer breeze. I am sensitive to the slightest movement or vibration. What makes the difference between me and the leaf, however, is that every movement I make is also a movement of my attention. It is the attentiveness of this movement that qualifies it as an instance of action and, by the same token, qualifies me as an agent. To put it another way, the essence of action lies not in aforethought (as our human philosopher would claim) but in the close coupling of bodily movement and perception. But that is also to say that all action is, to varying degrees, skilled. The skilled practitioner is one who can continually attune his or her movements to perturbations in the perceived environment without ever interrupting the flow of action. But such skill does not come ready-made. Rather, it develops, as part and parcel of the organism’s own growth and development in an environment. Since agency calls for skill, and since skill arises through development, it follows that the process of development is a sine qua non for the exercise of agency. To attribute agency to objects that do not grow or develop, that consequently embody no skill, and whose movement is not therefore coupled to their perception, is ludicrous.’

Listening to this, ANT remains unimpressed. ‘Well, you would say that, wouldn’t you?’ he remarked caustically. ‘You are SPIDER, and you stand for the proposition that Skilled Practice Involves Developmentally Embodied Responsiveness. I appreciate your views; they are indeed worth their weight IN GOLD (which is very little, I might add, since you are such a lightweight creature). But I am ANT. I stand for Actor-Network Theory. Not for nothing am I known as THE TOWER among arthropods.7 For my philosophy towers over yours.’

‘You are indeed a master of lofty thoughts’, admits SPIDER wearily. ‘But I cannot, for the most part, understand a word of what you say.’ And with that, she scuttles off.
PART III

Earth and sky

We are, these days, increasingly bombarded with information about what is known as ‘the environment’. Seated in our homes, in classrooms or in conference theatres, this environment is flashed before our eyes in images of landscapes, wildlife and peoples from around the globe, often to the accompaniment of facts and figures assembled to deliver a compelling message of change. Indeed, so accustomed are we to viewing images of this kind that we are, I think, inclined to forget that the environment is, in the first place, a world we live in, and not a world we look at. We inhabit our environment: we are part of it; and through this practice of habitation it becomes part of us too. We see with eyes trained by our experience of watching what is going on around us, hear with ears tuned by the sounds that matter to us, and touch with bodies that have become accustomed, by the lives we lead, to certain kinds of movement. Smells, too, excite memories and anticipations. This inhabited world – the world of our perception – includes the earth beneath our feet, the sky arching above our heads, the air we breathe, not to mention the profusion of vegetation, powered by the light of the sun, and all the animals that depend on it, busily absorbed in their own lives as are we in ours. To remind yourself of this, I would like you to take a walk outside, in the open air. For so long as you are sitting indoors, as you probably are while you read these lines, the world of earth and sky is one you can only imagine. It is, moreover, such a fragile imagining that it is all too readily crushed by the high-powered impact of a global science more intent on establishing the authority of its own particular view of the environment, and of what human beings are doing to it, than on enhancing our own awareness or powers of observation.

What this science is telling us in conference rooms around the world – furnished with exactly the same equipment of projection, with blinds drawn to cut out the light, and populated by globetrotting international experts – is that if you thought the environment was as you found it when you took your stroll out of doors, you were wrong, or at least childishy naive. You were as wrong as were some of the young participants in a recent study conducted by researchers in developmental psychology, on which I report in Chapter 8. The researchers wanted to know how children acquire their knowledge of the shape of the earth. Many of the children recruited for the study, when asked to depict the earth, drew
it as a roughly level ground with people and buildings standing on it. And when asked to
depict the sky, they described it as a region above the earth, with a shining sun and floating
clouds. Others, however, depicted the earth in the form of a circle, adding some stick figures
around the circumference. These latter children, according to the experimenters, had got it
right. They had acquired what was supposed to be the scientifically correct view, which is
that contrary to intuition, people actually live all around on the outside of a spherical earth.
But when the experimenters then requested that the children add the sky to their pictures,
they were flummoxed. ‘You mean space’, one queried. It was not of course the children
who were confused. They understood perfectly well that it is one thing to comprehend
the environment from the point of view of an inhabitant, and quite another to adopt an
imaginary viewpoint that could only be obtained from outer space.

From the former perspective, the environment might indeed be conceived as the world
around us, extending from where we are to the horizon, with the earth below and the sky
above. But from the latter perspective, the relation between people and the world seems to
be turned inside out. When scientists speak of the ‘global environment’, they have in mind
a world that we humans have ourselves surrounded. Expelled to its outer surface, we have
become exhabitants rather than inhabitants. Indeed this global environment is not one to
which you or I or anyone else can relate. It is too big. I can relate to the model globe that
usually stands on a shelf in my house. Along with the books, family photos and potted plants
placed beside it, this globe is a familiar item of my environment. But I cannot relate to the
globe as an environment. Whereas the globe is measured and recorded, the environment
is experienced. One has climate, the other has weather. One has its atmosphere, the other
includes the sky. And it is on this environment of earth and sky that I focus in Chapter 9. To
inhabit the earth–sky world, I argue, is to live life in the open. Yet philosophical attempts
to characterise the open lead to paradox. Do we follow Martin Heidegger in treating the
open as an enclosed space cleared from within, or Immanuel Kant (and, following his lead,
mainstream science) in placing the open all around on the outside? One possible solution is
offered by James Gibson in his ecological approach to perception. The Gibsonian perceiver
is supported on the ground, with the sky above and the earth below. In this view, however,
the world is habitable only to the extent that it is furnished with objects. These objects, for
Gibson, are laid out upon the ground like models on a baseboard, or scenery on a stage. Yet
in such a world, how could anything live or breathe?

There could be no terrestrial life were it not for the processes of respiration, by which
living organisms bind air with rainwater and nutrients drawn from the soil, in the presence of
sunlight, in forging their own growth and movement. Crucially, these processes continually
disrupt any interface between earth and sky. Thus to inhabit the open is not to be stranded
on the outer surface of the earth but to be caught up in the substantial flows and aerial fluxes
of what I call the weather-world. While much has been written on how we see the landscape,
there is virtually no literature on the relation between visual perception and the weather.
Chapter 10 is an attempt to take the study of vision out of doors. I argue that weather enters
visual awareness not as a scenic panorama but as an experience of light. Rather than placing
sight and light on opposite sides of a boundary between the mind and the physical world,
I follow Maurice Merleau-Ponty in claiming that light is fundamentally an experience of
being in the world that is ontologically prior to the sight of things. Though we do not see
light, we do see in light. Since weather, as a phenomenon of the medium, is an experience
of light, to see in the light is to see in the weather. In the canons of modern thought,
however, the surfaces of the landscape are identified with the limits of materiality. This, in turn, renders immaterial the medium through which persons and organisms move in perception and action. Thus while the landscape appears to be real, the weather can only be imagined. Overturning this ontology, I show that in the perception of the weather-world, earth and sky are not opposed as real to immaterial, but inextricably linked within one indivisible field.

Clearly, light is essential to organic growth; there would be no life without it. But it is also essential to vision: we could not see without it. Yet the experience of light has been marginalised by parallel reductions on the sides of both bioscience and visual studies. Where does the discourse of contemporary bioscience find the key to life? Not in the photosynthetic reactions that bind earth, air and water in the light, but secreted away in the nucleus of the cell, in the DNA of the genome. On its own, of course, the DNA molecule is remarkably inert, which is precisely why it has proved such a powerful tool of forensic analysis. Only in the biochemical environment of multicellular organisms, themselves enmeshed in exchanges of substance along the lines of flow comprising the wider environment, do molecules of DNA have the effects they do. What logic, then, leads scientists – or perhaps more accurately, those who speak for science – to attribute life to the agency of genes? It is of course the logic of inversion, which we have already encountered in the second part of this book. The life of the organism, having been read into its genes, is recast by this logic as the outward, phenotypic expression of an inner design, the genotype. Exactly the same inversion, however, is at work in studies of visual culture, where the image has been made to do the same work as the genome in bioscience: just as the genome codifies the process of life so that it can be ‘played back’ to science, so the image captures the process of vision and renders it back to the analyst. Where the bioscientist looks to recover life from the genome, the visual analyst seeks to recover vision from the image.

The visual, in brief, is shorthand for vision relayed in the visible. That is to say, it is produced through an operation of playback, by which we are allowed to see and to interpret our own visual experience only as this experience is encoded in objects of sight. It is precisely this logic that underwrites the notion of landscape as a primarily visual phenomenon. In Chapter 11, which is really just a postscript to the tenth chapter, I apply the same argument in a critique of the concept of soundscape. Just as the idea of the visual rests on the playback functions of images, so, I argue, does the idea of the aural rest on the playback functions of recordings. As the visual is to light, and the aural to sound, so the landscape is to the weather-world. To regain the currents of life, and of sensory awareness, we need to join in the movements that give rise to things rather than casting our attention back upon their objective and objectified forms. We need, in a word, to undo the operation of inversion, abandoning the fixities of genes, images, recordings and landscapes for the generative movements, respectively, of life, light, sound and weather.
8

THE SHAPE OF THE EARTH

Round, not flat

As every educated grown-up knows, the earth is round and not flat. Though much remains contentious in physics and astronomy, the truth of this proposition appears beyond dispute. Yet it took centuries of painstaking observation, measurement, calculation and deduction to establish what most of us now take for granted. The idea that the earth is spherical in form is generally credited to Pythagoras and his school, in the sixth century BC, though it was the mystical perfection of the form rather than any empirical evidence that led them to it. Two centuries later, in his *On the Heavens* (350 BC), Aristotle marshalled a series of physical arguments to prove why the earth must be round, and adduced as evidence both the curved shadow cast by the earth during a lunar eclipse and the changing inclination of the stars to the horizon as one travels northwards or southwards. It was left to Ptolemy of Alexandria, in the second century AD, to establish the earth’s place within the system of known planets, and to Copernicus in the sixteenth century – building on the work of Islamic astronomers such as the ninth-century Al Balkhi and the eleventh-century Al Biruni – to recognise that far from being the immovable centre around which all else turns, it is in truth the earth itself that revolves around the sun. Today this heliocentric model, updated in the light of more recent discoveries, is impressed on every schoolchild through the cosmic maps and charts that adorn the walls of classrooms.

It is one thing to be familiar with a model, however; quite another for this model to be so internalised as to structure one’s very thinking about the world. There is no reason to suppose that children are born with the knowledge that the earth is round, let alone that it revolves around the sun. If this is something that every adult knows, then it must somehow be learned. Just how children learn the shape of the earth is, however, a matter of some controversy in cognitive and developmental psychology. A number of studies suggest that a correct understanding of the earth, as a solid sphere surrounded by space, challenges fundamental presuppositions that children everywhere, regardless of cultural background, initially bring to their reasoning. These presuppositions are, first, that the ground is flat, and, secondly, that unless supported, things fall. To grasp such a counter-intuitive understanding that the earth is round like a ball and that people can live anywhere without falling off
calls, it is argued, for nothing less than a complete conceptual restructuring of the child’s mind, comparable to a paradigm shift in the history of science. What took centuries for our predecessors, as flat-earth gave way to round-earth thinking, and as geocentrism gave way to heliocentrism, has to be recapitulated by every child in the space of a few short years. How does this come about?

Experimenting with schoolchildren aged between six and eleven years, from the State of Illinois, psychologists Stella Vosniadou and William F. Brewer claim to have identified a developmental sequence in thinking about the earth, running from an initial mental model of an earth that is flat like a pancake to a final model of a spherical earth, by way of various intermediate models in which children attempt to synthesise their initial presuppositions with information supplied by their teachers, or gleaned from books, charts or other sources (Vosniadou and Brewer 1992; Vosniadou 1994; see Figure 8.1). One such model is what they call ‘hollow sphere’; another is ‘dual earth’. Each looks like a peculiar hybrid of flat-earth and round-earth thinking. I shall begin by describing these models, and the kinds of reasoning in which the children alleged to hold them engage. My ultimate aim in doing so, however, is to show that their hybrid character, and the internal contradictions to which it gives rise, is not a symptom of their transitional status between

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The naive intuition that the earth is flat and the informed knowledge that it is really a sphere. It is rather indicative of a more fundamental existential dilemma, as pressing for adults as it is for children, and indeed for philosophers as it is for laypersons, that arises when access to what passes for certain knowledge – in this case of the shape of the earth – is predicated upon the renunciation of the very experience, of inhabiting the earth, that makes such knowledge possible.

Mental models of the earth

In their experiment, Vosniadou and Brewer (1992: 543–545) presented each of the children interviewed with a series of questions. These questions were deliberately open-ended, requiring the child to work out a response by drawing on whatever conceptual resources they could muster, rather than simply to choose between ready-made options. The experimenters began by asking ‘What is the shape of the earth?’ To this, most answered ‘round’ or ‘like a ball’. They then asked which way you would look to see the earth, and what is above, below and to the sides of it. At this point, the child was instructed to draw a picture of the earth and to indicate on the picture where the moon and stars would go. Having done that, the child was told to draw in the sky and to show on the drawing where people live. To respondents who had begun by claiming that the earth was round, and had drawn it as a rough circle, the experimenters then revealed a picture of a house on an apparently flat landscape. A dialogue of the following kind would then ensue:

Experimenters: The house is on the earth, isn’t it?
Child: Yes, the house is on the earth.
Experimenters: How come here the earth is flat but before you made it round?

The child was then asked where they would end up if they walked for many days in a straight line. If they answered ‘somewhere else’, ‘in another country’ or ‘on the coast’, they were told to keep on going, in the mind’s eye, helped along if necessary by cars, trains and boats. Would they eventually reach the ends of the earth, or would they find themselves back where they started? And if they were to reach the ends of the earth, would they be at risk of falling off? ‘Now tell me’, pressed the experimenters, in reference to the drawing, ‘what is down here below the earth?’

Seven-year-old Mathew accepted that if you just kept walking and walking, and had a never-ending supply of provisions, you might reach the end of the earth, but that there would be no danger of falling off. ‘If we were outside the earth’, he explained, ‘we could probably fall off, but if we were inside the earth we couldn’t fall off’ (ibid.: 548). Mathew’s logic, according to Vosniadou and Brewer, is precisely what is to be expected from a ‘hollow sphere’ model of the earth. The children alleged to reason in terms of this model were in no doubt that the earth is spherical in form, but most envisaged the sphere as comprising two hemispheres, solid below and hollow above, with people living on the flat interface between the two (ibid.: 549–550). Ten-year-old Venica, for example, insisted that the real shape of the earth is ‘round like a ball’; however, it looks flat to its inhabitants because they live ‘inside the ball … in the middle of it’ (ibid.: 563–564). Like Mathew, Venica was convinced that there was no danger for the inhabitant of falling off the edge of the earth; interestingly, however, she also observed that to perceive the earth as the sphere it really is one would have to be in a
spaceship. Since spaceships are seen from an earthbound perspective to rise into the heavens, she concluded that the edge or circumference of the earth is perceptible ‘only if you go up’.

High in her spaceship, Venica would look down to see the earth as a ball. Other children, however, said that to see the earth one would definitely have to look up. These children maintained that the earth is not only round, but also completely solid. They would draw the earth as a circle. But when asked to show on their drawings where people live, far from locating their figures inside the circle or around its circumference, they would either place them on a horizontal line drawn beneath their depiction of the earth-ball or use the lower edge of the paper itself as a baseline, and place their figures on the border. At first, the experimenters were perplexed by this, as the following exchange with nine-year-old Darcy reveals. In response to initial requests, Darcy has drawn a round earth, and has added the moon and some stars. When the experimenter asks where people live, Darcy draws a house whose base lies along the lower border of the paper. The experimenter asks again, and Darcy draws another house. On the third request, Darcy eventually gives in to the experimenter’s implicit demands, rubs out one of her houses, and draws a stick figure upon her round earth (Figure 8.2b). This, however, only sparks off a further round of interrogation. ‘This house is on the earth isn’t it?’ says the experimenter, pointing to the sketch of the house that remains after the other was erased. ‘How come the earth here is flat but before you made it round?’ The following dialogue ensues:

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\begin{align*}
  \text{Darcy:} & \quad \text{I don’t know.} \\
  \text{Experimenter:} & \quad \text{Is the earth really round?} \\
  \text{Darcy:} & \quad \text{No.} \\
  \text{Experimenter:} & \quad \text{It’s not really round. Well, what shape is it?} \\
  \text{Darcy:} & \quad \text{Yaa, it’s round.} \\
  \text{Experimenter:} & \quad \text{Then how come it looks flat here?} \\
  \text{Darcy:} & \quad \text{Because it’s on the ground.} \\
  \text{Experimenter:} & \quad \text{But why does that make it look flat?} \\
  \text{Darcy:} & \quad \text{Because the ground’s flat.} \\
  \text{Experimenter:} & \quad \text{But the shape of the earth is…} \\
  \text{Darcy:} & \quad \text{Round.}
\end{align*}
\]

(ibid.: 570)

To the experimenter it seemed that Darcy was being wilfully inconsistent, wavering between conceptions of the earth’s surface as round and flat. But it was in fact the experimenter who had thrown the whole exercise into confusion by insisting on using the word ‘earth’ for what Darcy clearly and consistently distinguished as the ground. Faced with this confusion, Darcy does not at first know how to respond. Then she admits that if the earth is understood in the specific sense in which the experimenter had just used the term, that is to denote the ground, then of course it is not round. Appearing to contradict herself, however, she actually regains her footing, reasserting that the earth is indeed round, by contrast to the flat ground. On her own terms she is, indeed, being thoroughly consistent. Along with other children who responded along similar lines, Darcy’s reasoning appears to be structured by what Vosniadou and Brewer call a ‘dual earth model’. According to this model there are two earths, ‘a round one which is up in the sky and a flat one where people live’ (ibid.: 550). Adherents of this model, like Darcy, generally use the word ‘earth’ only for
the former and ‘ground’ for the latter. Thus whereas adherents of the hollow earth reconcile their experience of living on the flat with their knowledge that the earth is round by putting the one inside the other, dual earthers keep the two strictly separate.

It was not only by mixing up earth and ground that the experimenters confused their research subjects. Another layer of confusion was introduced in their request to the children to add the sky to their drawings of the earth, moon and stars. Even adults, as Vosniadou and Brewer admit (ibid.: 544), might find the idea of drawing the sky a little strange, and it is not obvious how one should go about it. For hollow earthers who identify the sky with the dome-like canopy of the earth’s upper hemisphere, it is hard to see how the sky can be added to a drawing that already depicts the spherical earth. Since the moon and stars are in the sky, hollow earthers could just as well place them within the circumference of the earth as around on the outside. Dual earthers were equally puzzled. When Darcy, for example, drew her round earth, she logically placed the moon and the stars around it on the outside, since this earth was supposed to be solid. Asked to add the sky to the picture, however, Darcy was confounded. ‘It’s icky’, she says (ibid.: 570). Draw the sky she must, however, and she does so.

FIGURE 8.2 (a) Ethan’s drawing of the spherical earth surrounded by the ‘sky’; (b) Darcy’s drawing of the sky, the ground (with houses) and the spherical earth. Reproduced from Vosniadou and Brewer (1992: 558). Reprinted by permission of Elsevier.
by sketching some roughly horizontal lines, looking much like a cloud base, near the top of the paper, above her drawing of the earth, moon and stars. This sky, however, is positioned not in relation to her drawing of the earth, but in relation to the ground that is supposed to coincide with the lower edge of the paper, and on which she drew her houses.

The absurdity of asking children to add the sky to a drawing of the round earth is most starkly revealed in the case of those children who appeared to have fully grasped the ‘scientifically correct’ model of the earth as a sphere, and to have laid their naive intuitions to rest. One such was six-year-old Ethan. In response to the experimenter’s questions, Ethan has already explained that the earth is round like a ball, that to see it one has to look downwards, and that above, below and all around it is just space. To the question about walking on and on in a straight line, he will confidently go on to respond that you would end up where you started. There is no end to the earth, he will say, and wherever you are on its surface, gravity pulls you down. The precocious Ethan, it seems, ticks all the scientific boxes. But at the point in the interview when the experimenter asks him to add the sky to his picture of the earth, even he is momentarily stuck. How can you add the sky to a picture of the earth in space? From the vantage of space there is no sky (Berleant 2010: 138). Scientifically speaking, what surrounds the earth is its atmosphere, understood as a gaseous envelope that peters out with increasing distance from the earth’s surface. We do not know whether Ethan had any knowledge of the atmosphere in the strict scientific sense, but, even if he did, this was not what he was asked to draw. He was asked to draw the sky. And the sky no more belongs within a picture of the earth as a solid sphere than does the ground on which people live. To see the sky, you have to be on the ground. Like the ground, the sky pertains to the phenomenal rather than the physical order of reality.

In the event, Ethan duly obliged the experimenter, delivering what was taken to be the ‘correct’ response by drawing a ring around his earth-circle, but not without first having challenged her with the withering rebuke: ‘The sky has no shape, you mean space’ (Vosniadou and Brewer 1992: 557; see Figure 8.2a). Whatever the experimenter might have taken his outer ring to mean, so far as Ethan was concerned it was not the sky. Rather, his circumferential gesture, and the trace it left, was his way of saying that the earth is surrounded by space. Darcy, for her part, realised – as the experimenter apparently did not – that the sky can only be described within a picture of the earth conceived as the ground of human habitation, and that in relation to such habitation, it can only be ‘on top’. Revealing, too, was the fact that of those children credited with a spherical model of the earth, a substantial proportion confounded expectations by insisting that to see the earth one must look up, not down. Vosniadou and Brewer attempt to account for this anomaly by suggesting that children may use the phrase ‘look up’ in ways their teachers do, when they tell their pupils to look up to a chart on the classroom wall or to look something up in a book (ibid.: 555). This explanation could hardly be less convincing. As Ethan himself pointed out, with his characteristic erudition, the reason why the earth looks flat to those who live on it is because they are so close to the ground, and the earth itself is so big, that they are unaware of its curvature (ibid.: 557). So while the terrestrial earth may literally be beneath one’s feet, its spherical form can only be revealed through its projection as a heavenly body, and to see the heavens one must look up.

This, of course, is precisely what happens in a lunar eclipse. The astronomer, supported on level ground, looks up and sees the shadow of the spherical earth silhouetted against the moon. Recall that no less a figure than Aristotle appealed to the eclipse, as proving beyond
doubt that the earth is round. Had Aristotle been a subject of the Vosniadou and Brewer experiment, he might well have come out as a dual earther. Is the dualism of the dual earth, then, a stage to be overcome in the transition from childish naivety to mature knowledge, or intrinsic to the project of scientific thought itself? This is a question to which I shall return. In the meantime, I want to turn to an alternative set of experiments that lead to very different conclusions about how children – and indeed adults – learn the shape of the earth.

Mental models or methodological artefacts?

Interpreting children’s drawings is notoriously tricky. Both the technical constraints of working with pencil on paper and the orientational biases that come from using rectangular sheets with top, bottom and sides can strongly influence the ways a drawing is composed. How, for example, do you render, by means of a continuous line, a three-dimensional body like a sphere that has no lines at all? Most children drew what they took to be an earth-ball by drawing a rough circle. Asked to draw the people, even those credited with a ‘spherical’ model tended to draw them inside the sphere rather than all around the circumference, on the outside. To have drawn them on the outside, Vosniadou and Brewer admit (ibid.: 556), would have been difficult, particularly as it would have meant drawing some of them on their side, or upside down, relative to the axes of the paper. But it is not obvious, from a drawing of a circle with figures inside, whether the child imagines the people to be inside the earth or stuck to its outer surface. Some children may have simply found it easier to draw figures upright on a horizontal baseline, with results that make it look as though they hold to a model of a hollow or dual earth. It is moreover doubtful whether the drawings of younger children, who have yet to be introduced to adult pictorial conventions, can be taken as representations of what they consider to be the real world. Thus the ring that Ethan drew around his earth did not represent the sky, or even space. It was simply the trace left by a gestural movement through which he performed his understanding that space is all around the earth.

It is also difficult to be sure to what extent the answers the children came up with, under interrogation, reflect their own processes of independent reasoning. They could just as well have been improvised in order to satisfy their expectations of what the experimenter wanted. From the children’s point of view, as we have seen, the experimenters were manifestly inconsistent, for example in using the word ‘earth’ to refer at one moment to the planet, and at another to the ground, forcing ostensibly contradictory responses. Yet it may well be that the children felt under some pressure, in the experimental situation, to be consistent in their answers. It could be, too, that having produced their drawings as instructed, their responses to subsequent questioning were more about justifying the drawings than justifying the models that are alleged to have given rise to them. For all these reasons, the results of Vosniadou and Brewer’s experiment cannot necessarily be taken at face value. An alternative experimental procedure, which would get around the problems raised by asking children to draw things and subjecting them to open-ended questioning, would be to ask them to choose between, or to rank in order of veracity, a series of ready-depicted options. Just such a procedure was adopted in a more recent study by Gavin Nobes, Alan E. Martin and Georgia Panagiotaki (2005), and it led to quite contrary results.

In this study the experimenters prepared a set of picture cards, each of which showed the earth, people and sky in one of sixteen possible combinations of the following alternatives:
earth a solid sphere, flattened sphere, hollow sphere or disk; people all around or only on top; sky all around or only on top (Figure 8.3). Participants, who included both children (aged five to ten) and adults, were individually asked first to select the card they thought looked most like the real earth and then to repeat the procedure with all the others so as to yield a ranking from ‘most’ to ‘least like the Earth’ (Nobes et al. 2005: 52–54). Some two thirds of the participants in the study selected the combination of solid sphere with both people and sky all around. On the card depicting this combination, the earth figures as a greeny-brown ball, with rigid, lego-like people standing around its circumference and set against a light blue background flecked with fluffy white patches resembling clouds. The selection of this card by the majority of participants, according to Nobes and his collaborators, ‘indicated a scientific understanding of the Earth’ (ibid.: 55–57). The picture is, however, strangely paradoxical. On the one hand, it depicts people distributed around the outer surface of a solidly spherical earth, but on the other hand, it depicts the sky in a form that would only be apparent to someone lying on their back on the earth’s surface, gazing upwards!

Had any child in the Vosniadou and Brewer study produced a picture like this, they would undoubtedly have been credited with a dual earth model. For only a dual earther could stand or lie on the ground, looking up at the sky, and see there not just the clouds but another earth with its inhabitants all around on the surface. Yet not only do Nobes and his colleagues identify this picture card with a correct scientific understanding, it also seems to have caused no particular problem or cognitive dissonance for those participants who selected it. Most likely they treated the sky design as a kind of wallpaper, characterised by shapes and colours drawn from everyday experience, upon which is mounted a quite separate image of the earth, modelled perhaps on the familiar classroom globe. In other words, in this card we have not just one picture but two, the first of which (the earth-ball) is superimposed upon the background of the second (the sky). Might not the same, then, be said of the drawings that, in the Vosniadou and Brewer study, were supposed to have indicated the presence of hollow earth or dual earth models in the minds of the children who drew them? They, too, could be composite pictures. What if Darcy, for example, in response to the experimenter’s shifting notions of the earth, has drawn, on the same sheet of paper, one picture of the earth, moon and stars, and then another of the ground (with houses) and sky (Figure 8.2b)? What reason would we then have to doubt Darcy’s comprehension of the true shape of the earth?

**FIGURE 8.3** Examples of the picture cards used in the experiment by Nobes, Martin and Panagiotaki: flat earth with people around and sky on top; hollow earth with people supported and sky inside; spherical earth with people and sky around. Reproduced from Nobes et al. (2005: 54). Reprinted with permission from the *British Journal of Developmental Psychology* © The British Psychological Society.
In a more recent study, Nobes and Panagiotaki (2007) have gone on to address precisely these questions. They did so by applying a similar experimental protocol to that used by Vosniadou and Brewer with children, to a sample of adults: 350 college and university students from East London ranging in age from 17 to 69. The students were instructed to draw the earth, to draw where the sky and clouds go, and to draw some people to show where they lived. Then they were asked about the shape of the earth, where the sky is, where people live, where they would end up if they walked for days in a straight line, whether the earth ends anywhere and what lies beneath it (ibid.: 650). The drawing tasks in this experiment threw up all the main kinds of pictures identified in the Vosniadou and Brewer study, including hollow earth and dual earth varieties. In written comments on their experience, respondents spelled out explicitly many of the problems that must have been faced by the children tested by Vosniadou and Brewer. One complained, for example, that when instructed to draw the earth, he did not know whether this meant earth the planet, or just the ground. ‘If you draw the earth’, observed this respondent, ‘you can’t draw the sky or the people’ (ibid.: 654). And vice versa, of course: if you draw the sky and the people, you cannot draw the earth – for reasons of both scale and perspective. He solved the problem by drawing two pictures – one of the planet, the other of people on the ground with the sky above – conspicuously separating the two pictures with the word ‘or’ (Figure 8.4a). Another respondent drew three separate pictures: of the planetary earth, of a little house on the ground beneath the sky (with clouds), and of the same house on a much larger scale showing the people inside (ibid.: 652; Figure 8.4b).

If the meaning of ‘earth’ was ambiguous, the meaning of ‘sky’ was still more so. These adult respondents were familiar with the scientific concept of the atmosphere, but they were not sure whether, when asked to draw the sky, they were supposed to draw the atmosphere, as it surrounds the planet, or the sky and clouds that we ordinarily see above our heads. ‘I have never really thought about where the sky and the clouds are in relation to the whole world’, mused one respondent, ‘the sky and clouds are always above.’ Another asked: ‘Sky meaning what we see – blue above + clouds – or sky everywhere – e.g. outer space surrounding

FIGURE 8.4 Adults’ drawings of the earth (examples redrawn after Nobes and Panagiotaki 2007: 652). (a): two pictures with ‘or’; (b) three pictures.
Earth and sky

Earth’ (ibid.: 656). If the sky is the atmosphere, some reasoned, and if the atmosphere is an integral part of planet earth, then perhaps the sky should be inside the earth rather than outside of it. And by the same token, so should the people. Many respondents accordingly rejected the ‘scientifically correct’ view that people live all around on the outside of the earth. Outside, they argued, is space, and you cannot live in space. To live, there must be ground to walk on and air to breathe. Thus, people must live inside the earth (ibid.: 657). But perhaps the most perplexing question of all was the last: what is below the earth? The ‘correct’ scientific answer should have been either ‘sky’ or ‘space’. Yet a little reflection shows the question to be absurd. ‘Above’ and ‘below’ can only be established in relation to a base or ground. So what is below the ground? Earth! As one respondent commented, in conclusion, ‘these questions are not easy for adults to answer. For young people this would be difficult, confusing and probably quite upsetting for many!’ (ibid.: 658).

To clinch their argument, that depictions deviating from the ‘scientifically correct’ ideal tell us more about ambiguities in the questions asked than about the mental models of respondents, Nobes and Panagiotaki have carried out one further study, again with university students from East London of all ages (Nobes and Panagiotaki 2009). In this they reformulated the original questions so as to make it absolutely plain that by ‘the earth’ is meant our planet, and not the ground underfoot. ‘Imagine you are an astronaut in space’, the new instruction read. ‘You look out of the window of your spaceship and you see the earth. Please draw a picture of the earth as you think you would see it from your spaceship’ (ibid.: 353). The results were unequivocal. All dual earth and other multiple drawings were eliminated. Overall, the proportion of pictures classified as ‘scientific’ increased substantially, while the proportion of those that depicted the earth as it might be seen from the ground was markedly reduced. The problem with the Vosniadou and Brewer experiment, conclude Nobes and Panagiotaki, was that it prompted respondents to take first a panoptic, global perspective and then a grounded, local one, and proceeded to attribute the consequences of this perspectival double take, in fact built into the experimental design, to structures of reasoning in the minds of the children interviewed. Thus the dual earth drawings, far from depicting two earths – a round one up in sky and a flat one where people live – in fact depict the same earth from two different perspectives (ibid.: 359). So too do the hollow earth drawings, which differ only in that the order of enframing is reversed. In dual earth drawings a picture of the round earth is framed within one of the ground and the sky; in hollow earth drawings a picture of the ground and sky is framed within one of the earth.

Vosniadou and her colleagues have yet to respond to this latest study by Nobes and Panagiotaki. They have, however, responded to the earlier experiment with the picture cards (Vosniadou et al. 2004). It comes as no surprise that they are unimpressed. Requiring respondents to choose among ready-depicted options, they note, tells us nothing about how they think. The majority who selected the ‘scientifically correct’ spherical earth, with people all around on the outside, may have done so because they had been told, by people in authority, that this is what the earth is like. This does not mean, however, that they have understood what they have been told, to the extent of being able to think through it to other domains of experience (ibid.: 206). Anyone can tell you that the earth is round, but how many can use this knowledge to explain, with the lucidity of an Ethan, why it appears flat to someone on the ground? If the studies by Nobes and Panagiotaki have proved anything, it is that this is as much of a puzzle for many adults as it is for many children, calling as it does for a sophisticated grasp of scale and proportion. But by doing everything possible to remove
The ambiguities from the original questions, their latest study comes close to providing the answers in advance, absolving respondents of any need to think them through. How, after all, could you imagine yourself to be an astronaut in space, looking at the earth through the window of your spaceship, if you had not already been provided with the clues to deliver the ‘correct’ answer of what it would look like?

Behind this controversy lies a well-rehearsed debate in psychology about whether knowledge acquisition is strongly constrained by internal mental structures or more fundamentally dependent on sociocultural contexts of learning. Ranged on one side are the so-called ‘theory theorists’. Following in the footsteps of the great Swiss pioneer of developmental psychology, Jean Piaget, they imagine that inside every child is a miniature scientist. It is supposed that children, independently of one another, draw on native intuition, the evidence of direct observation and their developing powers of reason to build their own theories to explain the shape of the earth and why it appears to them in the way it does. On the other side are those, influenced more by Piaget’s Russian contemporary, Lev Vygotsky, who compare every child to a novice apprentice. Setting out with open minds, children are said to acquire their knowledge piecemeal, in loosely connected fragments, through participation in a social and cultural environment scaffolded by knowledgeable adults such as teachers, but also by artefacts such as the ubiquitous globes of school classrooms. Since, according to this latter approach, there is no initial conceptual barrier to be overcome, and given adequate scaffolding, children have little difficulty in acquiring a ‘scientific’ picture of the earth. In the design of their respective experiments, both sides have chosen methods to suit their approaches. These methods build in, from the start, precisely what the experiments purport to show: on the one side, that to know the earth is round is to have a theory and to think in terms of it; on the other, that to know it is round is to be able to repeat what you have been told. It is no wonder that each side has accused the other of circularity (Vosniadou et al. 2004: 205; Nobes and Panagiotaki 2009: 349–350). This is perhaps the point, then, at which to leave our psychologists in the pit they have dug for themselves, and to cast a more philosophical eye on the question of the shape of the earth.

What is the earth anyway?

In what follows I would like to try an experiment of my own. It is certainly not one that would meet with the approval of psychologists, since it yields no data for analysis. My research subjects are not even alive, and cannot therefore be tested directly. But they have left rich testimony to their thinking in their writings. What would happen if we put some of the tasks that Vosniadou and Brewer, and subsequently Nobes and Panagiotaki, put to their research subjects – respectively children from Illinois and students from East London – to a cast of dead philosophers? Let us ask them: what is the shape of the earth, where is the sky, and where do people live? How would they reply? My cast, in order of appearance, includes Saint Augustine, Immanuel Kant, James Gibson and Martin Heidegger.

Let us first despatch our team of experimenters far into the past, to the turn of the fifth century AD, to interview Saint Augustine. They command him to describe the earth. He replies that the earth is the entirety of the visible world, of God’s creation. It encompasses all that one can see. ‘Tell us, then’, press our experimenters, ‘what can you see?’ ‘We see heaven and earth’, responds Augustine, ‘that is, the upper and lower parts of the material world. We see that space of air, likewise called heaven, through which the birds take their
wandering flight. We see the plains shining above, the sun sufficing to the day, moon and stars comforting the night. We see water spread around us and swarming with fish. We see the face of the earth diversified with land-animals. And we see man…’ (1943: 108; XIII, xxxii).3

The experimenters, however, scent a contradiction. ‘You said that all we see is but earth, but now you say that the earth is only one part of this totality – the lower part – as distinct from the upper part of sky or heaven. Is the sky, then, above the earth or encompassed within it?’ Augustine patiently explains that ‘earth’ can be understood in two senses, to each of which there corresponds a certain sense of ‘heaven’. There is, on the one hand, the heaven that God created when he made ‘heaven and earth’. This is a material heaven, the heaven we can see, in relation to which the earth – in Augustine’s words – is ‘the earth I tread, the earth of which is made the body I bear’ (ibid.: 289; XII, ii). On the other hand, there is what Augustine calls the ‘heaven of heaven’, the abode of a transcendental intellect. To such an intellect, the material world is revealed in its entirety in one act, rather than piecemeal, one thing at a time, as it is to ordinary mortals destined to dwell within it and to draw together, in memory, the images to which their experiences give rise (ibid.: 219; X, viii; 294; XII, ix). ‘Compared to that heaven of heaven’, Augustine concludes, ‘the heaven above our earth is but earth. Thus it is not absurd to call each of these two great bodies “earth” in comparison to that mysterious heaven which is the Lord’s, and not for the children of men’ (ibid.: 289; XII, ii).

Our experimenters might well come away from this encounter convinced that Saint Augustine is committed to a model of the hollow earth, placing man in the midst of a world comprising the solid earth below and the aerial heaven above, while yet conceiving of the earth, from a God’s-eye perspective, as a totality comprising the two. Returning to their time machine, they fix its coordinates to the town of Königsberg, in Germany, towards the end of the eighteenth century. They are on their way to interview its most celebrated citizen, Immanuel Kant. Asked to describe the shape of the earth, Kant replies without hesitation that it is spherical. Yet, anticipating the experimenters’ next question, he hastens to admit that to his senses, the earth appears to be flat (Kant 1933: 606). ‘Then how do you know’, ask the experimenters, ‘that the earth is round?’ Kant, who scarcely ever ventured beyond his home town, responds that from the evidence of his senses alone, he would have no way of knowing this. The spherical form of the earth, he points out, is not an object of geographical knowledge. It is rather an idea that the mind brings to experience, a priori, in order to establish the possibility of such knowledge. Supposing that he lacked this idea, then, positioned at a particular point on the earth’s surface – such as his home of Königsberg – he would be able to acquire at most a knowledge of things lying within the circle of the horizon. He could further expand this knowledge by reading the reports of travellers relayed from other parts of the world. Indeed, Kant was an avid collector of such reports. But irrespective of the amount of information at his disposal, the one thing he could never know would be how much more there is still to be known. ‘I would know’, he explains, ‘the limits of my actual knowledge of the earth at any given time, but not the limits of all possible geography’ (ibid.: 606). In such a situation there could be no possibility of systematic knowledge, no way of fitting what is known so far within an overall conception of the whole.

But if, says Kant, ‘I have got so far as to know that the earth is a sphere and its surface is spherical’, then the situation is transformed. For, as the extent of the surface is finite and potentially calculable, he can estimate not only the limits of his present knowledge but also
the limits of the entire, potentially knowable world. And if the knowable world is spherical, Kant argued, so likewise is the world of knowledge.

Our reason is not like a plane indefinitely far extended, the limits of which we know in a general way only; but must rather be compared to a sphere, the radius of which can be determined from the curvature of the arc of its surface – that is to say, from the nature of synthetic \emph{a priori} propositions – and whereby we can likewise specify with certainty its volume and its limits.

(Kibid.: 607–608)

Knowledge is thus arrayed upon the spherical surface of the mind, just as the objects of knowledge are arrayed upon the spherical surface of the earth. The global topology of the earth’s surface here comes to stand for the fundamental idea, which the mind is said to contribute to experience, of the unity, completeness and continuity of nature. It is at this surface – conceived as an interface not just between the solid substance of the earth and its gaseous atmosphere but between matter and mind, and between sensation and cognition – that all knowledge is constituted (Richards 1974; Ingold 2000a: 212). The ‘scientifically correct’ view, that people live all around on the outside of a solidly spherical earth, has its source in this Kantian cosmology. As human reason takes the place of Augustine’s ‘heaven of heaven’, the earth itself becomes external to man. People, according to this view, do not find themselves within a world of heaven and earth but on the outside of a material world-sphere that is already closed up. In the words of Kant himself, ‘the world is the substratum and the stage on which the play of our skills proceeds’ (1970: 257). Life is played out upon this stage. People do not then live \emph{within} the world, but \emph{upon} its outer surface. They are no longer inhabitants but inhabitant.

Taking their leave of Kant, our experimental team now makes an appointment with one of the leading but also most heterodox thinkers of twentieth-century psychology, namely James Gibson. Reacting against the Kantian agenda, by now well established in mainstream theories of perception and cognition, Gibson was anxious to restore the perceiver to a world that is ‘all around’ rather than ‘out there’, or in a word to the \emph{environment} as distinct from the physical world. In relation to the environment, perceivers are inhabitants. Gibson positions the inhabitant not on the outer surface of a solid sphere but at the very core of what he calls ‘an unbounded spherical field’ (Gibson 1979: 66). This field comprises two hemispheres: of the sky above and of the earth below. At the interface between upper and lower hemispheres, and stretching out to the ‘great circle’ of the horizon, lies the ground upon which the inhabitant stands (ibid.: 162). The ground is a surface; indeed for terrestrial animals it is the most important of surfaces, since it provides their basic support (ibid.: 10, 33). But it is a surface \emph{in} the world, not \emph{of} it. With their feet planted in the ground and their lungs inhaling the air, inhabitants straddle a division not between the material world and the world of ideas, but between the more or less solid \emph{substances} of the earth and the ambient, volatile \emph{medium} in which they are immersed (ibid.: 16–22).

Indeed to our experimenters, Gibson’s depiction of the environment immediately brings to mind the ‘hollow earth’ model that they had also found to underwrite the reasoning of Augustine. In order to ascertain whether this is indeed the case, they ask him to draw in outline the earth–sky world that he has described. But Gibson refuses. The very practice of outline drawing, he maintains, introduces a false notion of confinement (ibid.: 66). It leads
us to imagine that earth and sky are enclosed within a shell. But for Gibson, the ‘spherical field’ of the inhabitant’s perception is unbounded. The horizon is not a boundary because it moves with the inhabitant. It cannot be reached or crossed. Things do not break through a barrier when they come into view. And when you look upwards, you do not see yourself surrounded by a closed surface. Life under the sky is lived in the open, not within the confines of a hollow hemisphere with a flat base and a domed top. Thus the sky has no outline, and you cannot draw it. All you can draw are the shapes of things in the sky, or silhouetted against it. Indeed whilst Gibson objects to drawing the earth and the sky, he has no such scruples about drawing what is on the earth and in the sky. When the experimenters ask him to draw people and houses on a baseline that depicts the ground, and to add clouds, the sun and moon and stars to the space above it, he is ready and willing to oblige.

In the interpretation of these drawings, however, Gibson is unequivocally at odds with our experimenters. For he will not accept them as evidence for the conceptual ordering of experience, or as revealing anything about the way he thinks. No more than the drawings of children, he says, do they give visible form to mental models inside his head. It is not as though, when you are about to draw, you first look at an object so as to obtain a mental image of it, and then, projecting the image ‘back’ onto your drawing pad, trace its outline on the page. You may draw a person, a house, or the sun in the sky, making marks on a surface that record the movements of the pencil in your hand. What these marks delineate, however, are not images but what Gibson calls ‘invariants’ (ibid.: 278–279). Invariants emerge as parametric constants underlying the continuous flow of perspective structure as one moves along a path of observation. Unlike perspective structure, which is unique to every point of observation, invariant structure is common to all points and therefore discloses ‘the rigid layout of environmental surfaces’ (ibid.: 73–74). To draw, then, is not to render the likeness of a thing, but to extract its rigidity. The result, however, is peculiarly static. As a rigid layout, Gibson’s ‘environment’ seems locked solid. It is as though the people, the houses, the clouds and the sun were turned to stone. Admittedly, by comparison to the Kantian exhabitant who roams the outer surface of the globe, the Gibsonian inhabitant finds himself at the centre of a spherical world. But though exquisitely realistic and fully furnished, it is a world that turns out to harbour no life at all.

After their appointment with Gibson, our intrepid experimenters head off, rucksacks on their backs, into the Black Forest of Germany. They are making for the mountain hut that the philosopher Martin Heidegger has turned into a retreat for meditation. In preparation for their trip, they had read one of Heidegger’s earlier essays, on the origin of the work of art. In this essay, he insists that the earth, ‘that on which and in which man bases his dwelling’, is not a material mass, and absolutely not a planet. It is rather the ground on which – or better, in which – we dwell (Heidegger 1971: 42). For the earth–ground does not just support its inhabitants. In an important sense it nourishes and shelters them. It is the very matrix of their dwelling. People are of the earth, they do not just live on it. Here, Heidegger recognises, as Augustine also did, that human bodies are as earthly as is the earth of the ground they tread, being of the same substance. So too are the plants that grow there, and the animals that are nourished by this growth. Likewise, clouds, sunsets and stars are phenomena of the sky, rather than – as Gibson thought – objects in it. “On the earth”, wrote Heidegger in his much later essay Building Dwelling Thinking, ‘already means “under the sky”’ (ibid.: 149). Earth and sky, then, are not two separate halves of the world that, if put together, add up to a unity. Each, rather, enfolds the other in its own becoming: the earth the sky in becoming
earth; the sky the earth in becoming sky. The earth binds the sky in the tissues of the plants and animals it supports and nourishes; the sky sweeps the earth in its currents of wind and weather. One is unthinkable without the other (ibid.: 149, 178).

Now in Heidegger’s terms, if you were to go up in a spaceship and look out of the window, the one thing you would not see is the earth. When, in 1966, the first photographic images of the earth as seen from space were beamed from the satellite Lunar Orbiter 1, Heidegger reacted with unbridled hostility. ‘I do not know whether you were frightened’, he remarked to an interviewer, ‘but I at any rate was frightened when I saw pictures coming from the moon to the earth … This is no longer the earth on which man lives’ (in Wolin 1993: 103). Perhaps it should have come as no surprise to our experimenters, then, that on putting their questions to Heidegger, he responds with equal if not greater hostility. He refuses, point blank, to admit that the earth is round. The planet is round, he says, but not the ground, and before all else, the earth is the ground. ‘Well, draw the planet, then’, our experimenters say, in exasperation. Heidegger draws the planet. ‘Now show where the people live.’ Heidegger explodes. ‘There is no place for Dasein on the planet’, he fumes. This is not just a problem of scale – that on any drawing of the earth, the people would be too small to see, just as they were invisible in the shots from Lunar Orbiter. More importantly, in an earth conceived as a solid sphere, there is nowhere for a person to be. For Heidegger, as Benjamin Lazier observes, ‘the rise of the planetary in the modern imagination was synonymous … with the demise of the earthly’ (Lazier n.d.: 10). It signified the displacement of human indebtedness to the earth by a technologically induced alienation. As Augustine’s ‘heaven of heaven’ has been replaced by a spaceship, humans have been expelled from the earth. The space station, as the contemporary philosopher Peter Sloterdijk has put it (2005: 236), represents a model for being in the world condemned to artificiality.

Round, flat and much else

What is a human being? What does it mean to be human? On the face of it, these questions seem to call for entirely different answers. To the first, we might respond that human beings collectively comprise a species of nature. They are terrestrial animals whose lives and livelihoods are necessarily bound to the potentials and constraints of the material world. As living organisms they are made of the same earthly stuff of this world, tread the same ground and breathe the same air. But to the second question, we are inclined to respond that to be human is to rise above and beyond the confines of nature within which the lives of all other creatures are bound. It is through the power of reason and its eventual triumph over both our own inner nature and the nature that surrounds us, we say, that the essence of our humanity is realised. It is realised historically, in the rise of civilisation and the concomitant advance of science. And it is recapitulated in the intellectual development of every modern individual from childhood to maturity. This claim to the transcendence of reason over nature provides science with the platform of supremacy from which, with no little hubris and profound contradiction, it asserts that human beings are part and parcel of the natural world. Are not scientists, and all who think like them, also human beings? How, then, can they be both of nature and beyond it at the same time? On further reflection, however, it seems that the very meaning of ‘human’ epitomises this contradiction. Referring neither to a species of nature nor to a condition of being that transcends nature, but rather to both simultaneously, ‘human’ is a word that points to the existential dilemma of a creature
that can know itself and the world of which it is a part only through the renunciation of its very being in that world.

If the experiments – both actual and fictional – that I have set out above prove anything, it is that precisely the same dualism, intrinsic to the concept of the ‘human’, is also responsible for the duplicity, in the western intellectual tradition, in understandings of the earth. For the human being, the earth is the ground, from which it derives both nourishment and support. This ground, argues philosopher Alphonso Lingis, ‘is not – save for astronauts and for the imagination of astronomers – the planet, an object which viewed from a distance is spherical. We do not feel ourselves on a platform … but feel a reservoir of support extending indefinitely in depth’ (Lingis 1998: 14). To be human, by contrast, means projecting ourselves to a beyond – whether it be Augustine’s intellectual heaven or Sloterdijk’s imaginary space station – that lies on the ‘far side’ of nature, and from there to look back on the earth as a planet. Historically, the ‘heaven of heaven’ that Augustine thought to be the preserve of God rather than man has been usurped by space scientists and astronauts. Only by going beyond the earth, it seems, can we see ourselves as of the earth. The ubiquity of what look like hybrid models in our experimental results is symptomatic not so much of a halfway stage in the development of scientific reason, as of the contradictory foundations of science itself, and of its enforced separation of knowing from being.

This separation has, I think, led us to an impasse. To find a way forward, we have to recognise that our humanity is neither something that comes with the territory, with our species-specific nature, nor an imagined condition that places the territory outside ourselves, but rather the ongoing historical process of our mutual and collective self-creation. What we are, or what we can be, is something that we continually shape through our actions – which we have constantly to work at, and for which we alone must bear the responsibility. But in shaping one another we also shape the earth, for which, too, we are responsible. This shaping is not a matter of imposing form on the formless substance of the material world. Rather, the shape of the earth emerges, whether in the imagination or on the ground, or both simultaneously, through our very practices of habitation. The earth is neither an object in space nor a space for objects; neither a round ball nor a flat base. Or if you will, it is both of these and much else besides. For the earth is ‘earthing’, continually growing and sprouting as a mélange of material flows, practical activities, perceptive observations and personal stories, and its shape is woven from all of these. The drawings elicited in the experiments I have described, for example, are not representations but little pictograms by means of which we tell particular stories about ourselves and about our understanding of the world we inhabit. Yet just as the child draws the sky, the ground and the planet, so too, the river draws the valley, the plough the field, the ship the ocean and the surveyor the map. Every time – and in whatever way – we draw the earth we add a new line to the mélange. In short, drawing shapes the world in which we dwell, at the same time as it shapes our own humanity.
So there I lie on the plateau, under me the central core of fire from which was thrust this
grumbling, grinding mass of plutonic rock, over me blue air, and between the fire of the rock
and the fire of the sun, scree, soil and water, moss, grass, flower and tree, insect, bird and beast,
rain and snow – the total mountain. Slowly I have found my way in.

Nan Shepherd (1977: 93)

‘To be alive’, writes Alphonso Lingis, ‘is to enjoy the light, enjoy the support of the ground,
the open paths and the buoyancy of the air’ (1998: 17). Knowing what it feels like to be out
for a walk in the open air, we readily concur. Yet once we try to pin it down within established
categories and conventions of thought, no feeling could be more elusive. Where is the ground?
What is the air? How can we inhabit the open? If we can do so only by containing it, then how
can the wind still blow? In what follows I seek to establish what it means to be ‘in the open’.
Instead of thinking of the inhabited world as composed of mutually exclusive hemispheres of
sky and earth, separated by the ground, we need to attend, as I shall show, to the fluxes of wind
and weather. To feel the air and walk on the ground is not to make external, tactile contact
with our surroundings but to mingle with them. In this mingling, as we live and breathe, the
wind, light and moisture of the sky bind with the substances of the earth in the continual
forging of a way through the tangle of lifelines that comprise the land.

To reach this conclusion I shall proceed in three stages. I show, first, that a ground
populated solely by people and objects, and a sky that is empty but for birds and clouds,
can exist only within a simulacrum of the world, modelled in an interior space. The second
stage of the argument is to show that in the open world, beings relate not as closed, objective
forms but by virtue of their common immersion in the fluxes of the medium. The process of
respiration, by which air is taken in by organisms from the medium and in turn surrendered
to it, is fundamental to all life. Thus, finally, to inhabit the open is to dwell within a weather-
world in which every being is destined to combine wind, rain, sunshine and earth in the
continuation of its own existence. I conclude with some remarks on how, in modern western
societies, the environment has been engineered, or ‘built’, to conform to expectations of
closure, but how life always, and inevitably, breaks through the bounds of the objective forms
in which we have sought to contain it.
Earth and sky

Where should we begin? For initial inspiration, I went back to the writings of the pioneer of ecological psychology, James Gibson. You will recall from the last chapter his telling our imaginary team of experimenters that the living being is positioned not on the external surface of a solid globe, as Immanuel Kant had imagined, but rather at the centre of a spherical field comprising the two hemispheres of sky and earth, with the ground as the interface between them. Supported by the ground, the inhabitants of Gibson’s account are not so much composites of mind and body, participating at once in the material world and the world of ideas, as immersed in a world of materials comprising earthly substances and the aerial medium.\(^1\) Like surfaces of all sorts, the ground has a characteristic, non-homogeneous texture that enables us to tell what it is a surface of: whether, for example, it is of bare rock, sand, soil or concrete (Gibson 1979: 16–22). We can recognise the texture visually because of the characteristic scatter pattern in the light reflected from the surface. Conversely, however, if there is no discernible pattern in the ambient light, then there is no identifiable texture, and instead of perceiving a surface we see an empty void (ibid.: 51–52).

The perception of the sky offers a case in point. Suppose that we cast our eyes upwards, from the ground on which we stand to the clear blue sky of a summer’s day. As our gaze rises above the line of the horizon, it is not as though another surface comes into view. Rather, the textureless blue of the sky signifies boundless emptiness. Nothing is there. Amidst this void, of course, there may exist textured regions that specify the surfaces, for example, of clouds in the sky. From a shower cloud, rain falls, leaving puddles on the ground. When the sun comes out again and the puddle dries up, the surface of water gives way to reveal another, of dry mud, in its place. But when the cloud, drained of moisture, eventually disperses, it vanishes to leave no surface at all (ibid.: 106). For the sky has no surface. It is open. But having said that, Gibson goes on to acknowledge that ‘an open environment is seldom or never realised’ and that life within such an environment would be all but impossible. Imagine an absolutely level earth, extending in all directions to the horizon without any obstruction, under a cloudless sky. It would be a desolate place indeed! ‘It would not be quite as lifeless as geometrical space’, Gibson admits, ‘but almost.’ You could stand up in it, walk and breathe, but not much else (ibid.: 78).

No ordinary environment is like that, however. Rather, it is ‘cluttered’ with every kind of thing, from hills and mountains to animals and plants, objects and artefacts. Or to put it another way, the environment is furnished. ‘The furniture of the earth’, Gibson continues, ‘like the furnishings of a room, is what makes it liveable.’ A cloudless sky, in these terms, would be uninhabitable, and could not therefore form any part of the environment for a living being. Birds could not fly in it. And an empty earth provides a terrestrial animal with nothing more than basic support; ‘the furniture of the earth’, as Gibson puts it, ‘affords all the rest of behaviour’ (ibid.: 78). Like actors on the stage, Gibsonian perceivers can only make their entrance once the surface has been furnished with the properties and scenery that make it possible for the play to proceed. Roaming around as on a set, they are fated to pick their way amidst the clutter of the world. It seems that for all his efforts to describe the world from an inhabitant’s point of view, Gibson is drawn to the conclusion that the terrestrial environment becomes habitable only to the extent that it is no longer open but enclosed. Such enclosure may never be more than partial, but for just that reason the inhabitant inevitably remains, to an extent, an exile.\(^2\)
A world without objects

Gibson is adamant that the inhabited environment does not just comprise the furniture of the world, any more than it comprises just earth and sky, empty of content. It must rather comprise both together, consisting – in his words – ‘of the earth and the sky with objects on the earth and in the sky, of mountains and clouds, fires and sunsets, pebbles and stars’ (ibid.: 66, original emphasis). It is worth pausing to consider some of the things he takes to be objects: on the earth there are mountains, pebbles and fires; in the sky there are clouds, sunsets and stars. Now of the things on the earth, perhaps only pebbles can be regarded as objects in any ordinary sense and, even then, only if we consider each individual stone in isolation from its neighbours, from the ground on which it lies and from the processes that brought it there. The hill is not an object on the earth’s surface but a formation of that surface, which can only appear as an object through its artificial excision from the landscape of which it is an integral part. And the fire is not an object but a manifestation of the process of combustion. Turning to the sky: stars, whatever their astronomical significance, are perceived not as objects but as points of light, and sunsets as the momentary glow of the sky as the sun vanishes beneath the horizon. Nor are clouds objects. Each is rather an incoherent, vaporous tumescence that swells and is carried along in the currents of the medium. To observe the clouds is not to view the furniture of the sky but to catch a fleeting glimpse of a sky-in-formation, never the same from one moment to the next.

Indeed in a world that is truly open there are no objects as such. For the object, having closed in on itself, has turned its back on the world, cutting itself off from the paths along which it came into being, and presenting only its congealed, outer surfaces for inspection. That is to say, the ‘objectness’ of things, their ‘over-againstness’ (Heidegger 1971: 167), is the result of an inversion that turns the lines of their generation into boundaries of exclusion.

The open world, however, has no such boundaries, no insides or outsides, only comings and goings. Such productive movements may generate formations, swellings, growths, protuberances and occurrences, but not objects. Thus in the open world hills rise up, as can be experienced by climbing them or, from a distance, by following the contours with one’s eyes. Fires burn, as we know from their flickering flames, the swirling of smoke and the warming of the body. And pebbles grate. It is of course this grating that gives rise to their rounded forms; tread on them, and that is what you hear underfoot. In the sky, the sun shines by day and the moon and stars by night, and clouds billow. They are, respectively, their shining and billowing, just as the hills are their rising, the fire is its burning and the pebbles are their grating.

In short, and contrary to Gibson’s contention, it is not through being furnished with objects that the open sphere of sky and earth is turned into a habitable environment. The furnished world is a full-scale model – a world brought indoors and reconstructed within a dedicated, enclosed space (see Figure 9.1). As in a stage set, hills are placed on the ground, while stars, clouds and the sun and moon are hung from the sky. In this as if world hills do not rise, nor do fires burn or pebbles grate, nor do the sun, moon and stars shine or the clouds billow. They may be made to look as though they do, but the appearance is an illusion. Absolutely nothing is going on. Only once the stage is set, and everything made ready, can the action begin. But the open world that creatures inhabit is not prepared for them in advance. It is continually coming into being around them. It is a world, that is, of formative and transformative processes. If such processes are of the essence of perception, then they are also of the essence of what is perceived. To understand how beings can inhabit this world
means attending to the dynamic processes of world-formation in which both perceivers and the phenomena they perceive are necessarily immersed. And to achieve this, we must think again about the relations between surfaces, substances and the medium.

Contending with the weather

To make a start, let me return to the metaphysical reflections of Martin Heidegger that I introduced towards the end of the last chapter. Like Gibson, Heidegger also recognises that people live ‘on the earth’ and ‘under the sky’. But his description of earth and sky could hardly be more different from Gibson’s. In place of nouns describing objects of furniture, Heidegger’s description is replete with verbs of growth and motion. ‘Earth’, writes Heidegger, ‘is the serving bearer, blossoming and fruiting, spreading out in rock and water, rising up into plant and animal’ (1971: 149). And of the sky, he writes that it ‘is the vaulting path of the sun, the course of the changing moon, the wandering glitter of the stars, the year’s seasons and their changes, the light and dusk of the day, the gloom and glow of the night, the clemency and inclemency of the weather, the drifting clouds and blue depth of
the ether’ (ibid.: 149). Moreover one cannot speak of the earth without already thinking also of the sky, and vice versa. But if we are to think of earth and sky thus, not as mutually exclusive domains but as manifolds of movement that are directly implicated in one another, then how should we go about it? How can we progress beyond the idea that life is played out upon the surface of a world already furnished with objects? It is perhaps because we are so used to thinking and writing indoors that we find it so difficult to imagine the inhabited environment as anything other than an enclosed, interior space. What would happen if, instead, we were to take our inquiry out of doors?

First and foremost, we would have to contend with those fluxes of the medium that we call weather (Ingold 2005a). For Gibson (1979: 19), the weather is simply what is going on in the medium, and beyond noting that it calls for various kinds of adaptation or behavioural adjustment on the part of inhabitants, he has no more to say about it. For the substances of the earth, in his view, are impervious to these goings-on. The terrestrial surface, which is taken to be relatively rigid and non-porous, ensures that aerial medium and earthly substances keep to their respective domains and do not mix. It is as though in the forms of the land, the earth had turned its back on the sky, refusing further intercourse with it. Thus the weather swirls about on top of the land, but does not participate further in its formation. Yet as every inhabitant knows, rainfall can turn a ploughed field into a sea of mud, frost can shatter solid rocks, lightning can ignite forest fires on land parched by summer heat, and the wind can whip sand into dunes, snow into drifts and the water of lakes and oceans into waves. In his study of how Koyukon people in Alaska perceive their surroundings, anthropologist Richard Nelson declares that ‘weather is the hammer and the land is the anvil’ (Nelson 1983: 33). But there are other, more subtle and delicate ways in which the land responds to fluxes in the medium. Think of the pearls of dew that pick out the tendrils of plants and spiders’ webs on a cool summer’s morning, or of the little trails left by a passing gust of wind in the dry leaves and broken twigs of a woodland floor.

Living in the land

Seasoned inhabitants know how to read the land as an intimate register of wind and weather. Like the Koyukon, they can sense the approach of a storm in the sudden burst of flame in a campfire, or – as the Yup’ik elder Fred George explains – they can read the direction of the prevailing wind in the orientation of tufts of frozen grass sticking out from the snow (Figure 9.4), or of snow ‘waves’ on ice-bound lakes (Nelson 1983: 41; Bradley 2002: 249). Yet the more one reads into the land, the more difficult it becomes to ascertain with any certainty where substances end and where the medium begins. For it is precisely through the binding of medium and substances that wind and weather leave their mark. Thus the land itself no longer appears as an interface separating the two, but as a vaguely defined zone of admixture and intermingling. Indeed anyone who has walked through the boreal forest in summer knows that the ‘ground’ is not really a coherent surface at all but a more or less impenetrable mass of tangled undergrowth, leaf litter and detritus, mosses and lichens, stones and boulders, split by cracks and crevasses, threaded by tree roots, and interspersed with swamps and marshes overgrown with rafts of vegetation that are liable to give way underfoot. Likewise, teacher, writer and hillwalker Nan Shepherd, describing her sojourn in the Cairngorm Mountains of north-east Scotland in an evocative passage that I have selected to head this chapter, finds herself between the solid rock beneath and the clear
sky above. Here, in this intermediate zone, are ‘soil and water, moss, grass, flower and tree, insect, bird and beast’. It is in this zone that life is lived, at depths depending upon the scale of the creature and its capacity to penetrate an environment that is ever more tightly woven. ‘Slowly’, Shepherd says, ‘I have found my way in’ (Shepherd 1977: 93).

This is the sense in which creatures live in the land and not on it (Figure 9.2). There could be no life in a world where medium and substances do not mix, or where the earth is locked inside – and the sky locked out – of a solid sphere. Wherever there is life and habitation, the interfacial separation of substance and medium is disrupted to give way to mutual permeability and binding. For it is in the nature of living beings themselves that, by way of their own processes of respiration, of breathing in and out, they bind the medium with substances in forging their own growth and movement through the world. Of a seed that has fallen to the ground, the painter Paul Klee writes that ‘the relation to earth and atmosphere begets the capacity to grow… The seed strikes root, initially the line is directed earthwards, though not to dwell there, only to draw energy thence for reaching up into the air’ (Klee 1973: 29). In growth, the point becomes a line, but the line, far from being mounted upon the pre-prepared surface of the ground, contributes to its ever-evolving weave. As Heidegger noted in his description of the earth, to which I have already referred, earthly substances ‘rise up’ into the forms of plants and animals (1971: 149). The land, we could say, is continually growing over, which is why archaeologists have to dig to recover the traces of past lives. And what hold it all together are the tangled and tangible lifelines of its inhabitants (Ingold 2007a: 80–81).

The wind, too, mingles with substances as it blows through the land, leaving traces of its passing in tracks or trails. ‘Around, up, above, what wind-walks!’, exclaimed Gerard Manley

![FIGURE 9.2 The exhabitant of the earth (a) and the inhabitant of the weather-world (b)]
Hopkins in his poem *Hurrahing in Harvest* (Hopkins 1972: 27). We could say of the wind that ‘it winds’, wending its way along twisted paths as do terrestrial travellers. These paths are often likened to ropes. There is an old tradition among Sámi people that by tying the ropes into knots the wind may be stopped, and that by untying them they are once more unleashed (Helander and Mustonen 2004: 537). Precisely because of the indeterminacy of the interface between substances and the medium, the same line of movement can register concurrently on the ground as a trace and in the air as a thread, such as when an animal is linked to the hunter by both its track and its scent. In his ethnographic account of the significance of wind among Khoisan hunter-gatherers of southern Africa, Chris Low (2008: 68) tells how, for the Khoisan, ‘wind connects the hunter with the prey like a thread leading from one body to another’. As every animal has its distinctive smell, the whole environment is riddled with such scent threads, binding its human and non-human inhabitants into an intricate mesh and percolating the very depths of their awareness. People even spoke of the threads as vibrating inside them, making a ringing sound.

**Binding life**

To inhabit the open is not, then, to be stranded on a closed surface but to be immersed in the incessant movements of wind and weather, in a zone wherein substances and medium are brought together in the constitution of beings that, by way of their activity, participate in stitching the textures of the land. ‘The first track’, explains the American tracker Tom Brown, ‘is the end of a string’ (1978: 1; see Ingold 2007a: 50–51). As this powerful metaphor suggests, the relation between land and weather does not cut across an impermeable interface between earth and sky but is rather one *between the binding and unbinding of the world*. Nowhere has this binding and unbinding been more vividly brought to life than in the drawings of Vincent van Gogh, of which art historian Philip Rawson writes: ‘the urgent movements of the clusters of lines show us how … the weather is *weathering*, the field *fielding* …’ (Rawson 1979: 23). The very ground appears to be bursting with life and movement (see Figure 9.3). In the open world that van Gogh reveals to us, the task of habitation is to bind substances and the medium into living forms. But bindings are not boundaries, and they no more contain the world, or enclose it, than does a knot contain the threads from which it is tied. They rather gather it up. And as Heidegger showed (1971: 181), every being, as it inhabits the world, gathers it up in its own particular way.

The Koyukon of Alaska often invoke the beings that inhabit their world by means of riddles (see Chapter 14). Taking up the subject position of the being to which he refers, the riddler describes its characteristic movements as though he were carrying them out himself, by means of an analogy with familiar human gestures. Like gusts of wind, these are fugitive movements in a weather-world in which all are immersed, and in which nothing ever stands still. In one such riddle, recorded by the Jesuit priest Julius Jetté at the beginning of the twentieth century, the riddler imagines himself as a tuft of grass. The literal translation runs as follows:

*over-there around I-sweep-with-my-body*

(Jetté 1913: 199–200)

The riddler is a broom, and the broom *is* its sweeping. He sweeps the place around him, just like the withered grasses that still poke out above the first snows of winter. In the wind the blades of grass bend over so as to touch the snow, still soft and loose from recent falls, sweeping...
a small circular patch around the place where they stand. With a vivacity and lightness of touch that trumps the writings of any western philosopher, the Koyukon riddler captures, in miniature, the way in which the manifold of earth, sky, wind and weather is concentrated in the experience of an inhabitant tasked with binding substances and medium. Here, the whole world is in a tuft of grass. Grown from the earth under the summer sunshine, now frozen in place by winter frost and blown by the wind, the grass makes a place for itself in the world by creating a patch in the snow (Figure 9.4). It is by such movements that every living being inhabits the world of the open.

But if life binds, then fire unbinds. Rather than binding the medium with substances, in the smoke of the hearth we find the reverse transformation, a release of substances to the medium in volatile form. As it rises, smoke mingles with circulations of air in the weather-world, and can even condense into clouds. In northern Finland, where I have carried out fieldwork, every dwelling was traditionally known as a ‘smoke’ since it could be recognised, even from some distance, by the white column rising vertically into the sky on a still, frosty day. However, the dwelling, with the hearth at its centre, still pertains to the world of the open, as does the life that goes on within it. Just as the living body is sustained by the rhythmic movement of breathing in and out, so the dwelling is sustained by the continual coming and going of its inhabitants. Thus it is important to distinguish between the ‘indoors’ of the dwelling that is wrapped around its inhabitants like a warm coat, and the ‘indoors’ of the as if world, of which I have already spoken, that has been reconstructed in an enclosed

FIGURE 9.3 A pencil sketch by Vincent van Gogh, dating from summer 1889, of a wheat field with cypress trees. Reproduced courtesy of the Van Gogh Museum, Amsterdam (Vincent van Gogh Foundation).
space. In the traditional dwelling, earth and sky are unified at the centre, where the smoke from the hearth rises to meet the sky; in the modern residence, by contrast, they are divided at the horizon, viewed through a vertical ‘picture window’ that frames the land as a backdrop. Whereas the dwelling is a place holder for life, the residence is a container.

**Breaking through the surface**

It has, of course, long been the ambition of modernist architecture and urban planning to bring closure to life, or to ‘put it inside’, by means of projects of construction that would seek to convert the world we inhabit into furnished accommodation, made ready to be occupied. Part of this containment entails creating the illusion of an absolute division between earth and sky, in part by hiding from view those disruptions of the surface that are necessary for the bubble to be sustained. It is in this light that we can interpret the progressive banishment of the hearth, in the architecture of modernity, from the centre to the periphery of the dwelling, along with the confinement of smoke within ever-lengthening chimneys. The tall factory chimney, belching smoke, proclaims the absolute separation of earth and sky at the same time as it hides away the points of disruption where fires actually burn. Likewise, paving the
streets of the modern city, as we saw in Chapter 3, makes it possible for inhabitants to sustain an illusion of groundlessness, as though they could traverse the pavements without making any contact with, or impression in, the earth. Under the rubric of the ‘built environment’, human industry has created an infrastructure of hard surfaces, fitted out with objects of all sorts, upon which the play of life is supposed to be enacted. Thus the rigid separation of substances from the medium that Gibson took to be a natural state of affairs has in fact been engineered in an attempt to get the world to conform to our expectations of it, and to provide it with the coherent surface we always thought it had.

Yet while designed to ease the transport of occupants across it, the hard surfacing of the earth actually blocks the very intermingling of substances with the medium that is essential to life, growth and habitation. Earth that has been surfaced cannot ‘rise up’, as Heidegger put it, into the plant or animal. Every paved road and every concrete foundation is a desert: nothing can grow there. The blockage is only provisional, however. Theodosius Dobzhansky (1965), one of the architects of the so-called new synthesis of twentieth-century evolutionary biology, liked to describe life as a process of ‘groping’. Literally ‘pervading everything so as to try everything, and trying everything so as to find everything’ (ibid.: 214), life will not be confined within bounded forms but rather threads its way through the world along the myriad of lines of its relations, probing every crack or crevice that might potentially afford growth and movement. Nothing, it seems, escapes its tentacles. Thus wherever anything lives the infrastructure of the occupied world is breaking up or wearing away, ceaselessly eroded.

FIGURE 9.5  Fungi breaking through asphalt, from an installation by Klaus Weber. Photo courtesy of the artist.
by the disorderly groping of inhabitants, both human and non-human, as they reincorporate and rearrange its crumbling fragments into their own ways of life (Ingold 2007a: 103).

For me, not only the futility of hard surfacing but also the sheer irrepressibility of life have been nowhere better dramatised than in a recent work by the German artist Klaus Weber (2004: 45–63). Having acquired an allotment in Berlin, Weber persuaded the Roads Department to coat it in a thick layer of motorway-grade asphalt. But before the machines rolled in, he sprinkled the area with the spores of a certain fungus. Once the asphalt had been laid he built a shed on one side of the plot, in which he lived as he watched what happened. After a while, bell-shaped bumps appeared, the asphalt began to crack and eventually fungi burst forth in great white blobs (Figure 9.5). Weber collected the fungus and fried it in his shed; apparently it tasted delicious! The mycelium had triumphed. And so too, in an open world, the creeping entanglements of life will always and inevitably triumph over our attempts to box them in.
LANDSCAPE OR WEATHER-WORLD?

The scope of the land

Theories of how people perceive the world around them – including theories that I have put forward myself (Ingold 2000a) – generally work from the assumption that this world is terrestrial. It is a world in which we can expect to find formations of the land such as hills and valleys, mountains and plains, interspersed with settlements such as villages and towns and threaded by paths, roads and waterways. To describe such a world, it is customary to use the word ‘landscape’. The word has a chequered history. Of early medieval provenance, it referred originally to an area of land bound into the everyday practices and customary usages of an agrarian community. However, its subsequent incorporation into the language of painterly depiction – above all through the tradition of Dutch art that developed in the seventeenth century (Alpers 1983) – has led generations of scholars to mistake the connotations of the suffix -scape for a particular ‘scopic regime’ of detailed and disinterested observation (Jay 1988). They have, it seems, been fooled by a superficial resemblance between scape and scope that is, in fact, entirely fortuitous and has no foundation in etymology. ‘Scope’ comes from the classical Greek skopos – literally ‘the target of the bowman, the mark towards which he gazes as he aims’ (Carruthers 1998: 79), – from which is derived the verb skopein, ‘to look’. ‘Scape’, quite to the contrary, comes from Old English sceppan or skyppan, meaning ‘to shape’ (Olwig 2008).

Medieval shapers of the land were not painters but farmers, whose purpose was not to render the material world in appearance rather than substance, but to wrest a living from the earth. Shape, for them, was as intrinsic to the constitution of the land as is weave to the constitution of cloth. Just as cloth is woven from the intertwined threads of warp and weft, so, in medieval times, the land was scaped by the people who, with foot, axe and plough, and with the assistance of their domestic animals, trod, hacked and scratched their lines into the earth, and thereby created its ever-evolving texture. This was work done close-up, in an immediate, muscular and visceral engagement with wood, grass and soil – the very opposite of the distanced, contemplative and panoramic optic that the word ‘landscape’ conjures up in many minds today. Nevertheless, the equation of the shape of the land with its look – of the scaped with the scopic – has become firmly lodged in the vocabulary of modernist art...
history. Landscape has thus come to be identified with scenery and with an art of description that would see the world spread out on a canvas, much as in the subsequent development of both cartography and photography, it would come to be projected onto a plate or screen, or the pages of an atlas.

In a landscape painting, however, and by contrast to a map, a large part of the picture often consists of sky. The painter is depicting a world of both earth and sky, recognising full well that in the play of colour, light and shade, one could not exist without the other. Painters such as John Constable devoted a great deal of attention to the sky, making detailed studies of clouds and cloud formation that were as rigorous as the science of the day would allow (Thornes 1999). Yet the sky has been almost universally ignored by art historians and others who have taken it upon themselves to comment on the paintings. Assuming that to depict a landscape is to render on canvas a particular portion of the earth’s surface and what lies upon it, the sky recedes in their attention to an unnoticed and taken-for-granted background. It might as well not be there. And it leads me to propose the following, as a kind of thought experiment (not to be repeated in the gallery). Suppose that we take a masterpiece of landscape art and cut the canvas along the horizon or skyline. Discarding the upper part, we then paste the lower part onto light blue or light grey wallpaper. Would it make any difference? Of course it would. But in all the writings on landscape art, I would challenge anyone to find some explanation as to what the difference is.

Looking up at the sky

The question comes down to this: is the sky a part of the landscape or is it not? If it is, then can we any more suppose that to perceive the landscape is to observe the surfaces of the earth, or of things on the earth? If it is not, then what are we to make of our perception of the sky? Does it float above the landscape? Or is it all just an illusion? In the psychology of visual perception, as we saw in the last chapter, the ecological approach pioneered by James Gibson is almost unique in offering some account of the sky. Yet it is an account shot through with paradox and contradiction. Reacting against the idea that what we see is a picture of the world, projected onto the retina as if on a screen, Gibson places perceivers right at the centre of a world that is all around them rather than passing by in front of their eyes. But he also insists that what we perceive are surfaces, both of the ground and of more or less solid objects on the ground. How, then, do we perceive the sky? Is the sky a surface – an interface between an aerial medium and a solid substance? If it were, then air travel would be hazardous, to say the least! Or is the sky, rather, the epitome of emptiness? If so, then how can it be inhabited? And what should we make of the clouds?

Imagine yourself in the woods, looking up toward the canopy of leaves overhead. Amidst the leafy texture, there are gaps or spaces that remain open to the sky. It is as though the canopy had holes in it. Birds fly into these holes, Gibson says, as they take wing from the treetops (Gibson 1979: 106). But can an environment really have holes in it? Do birds fly into holes? Can clouds cover them over? Does the sky have a surface, on an overcast day, which melts away on a clear one? Are isolated clouds objects suspended in the void? To answer in the affirmative would be to side with Winnie-the-Pooh, who famously hoped that by hanging from a balloon he might trick the bees into thinking that he, too, was a passing cloud when he was actually after their honey. The bees, of course, were not that stupid! But from Gibson’s account, Pooh might just have got away with it. Indeed Gibson
Earth and sky

has a particular problem with the sky, and with clouds. It stems from his insistence that while we see by means of light, the one thing we do not see is light itself. Rather, he claims, we see the surfaces of things, by way of their illumination.

I would like to digress for a moment to compare vision and hearing in this regard. We often think of sight as an objectifying sense. Standing here we look and see that cloud there, or that tree, or that bird, each as an object that is set over against us, at a distance. But with hearing it seems to be different. We say we hear sounds, as though we were bathed in them. They get inside us, and shake us up. Indeed, hearing and the experience of sound appear to be one and the same. But if that is so, why cannot vision equally be an experience of light? Can we not be bathed in the fluxes of light just as much as we are in those of sound? ‘Visual space’, writes Alphonso Lingis, ‘is not pure transparency; it is filled with light... Our gaze is immersed in it and sees with its cast’ (Lingis 1998: 13). Why then, against the evidence of such immersion, are sight and light so generally opposed rather than identified? The answer, I believe, lies in a peculiar set of beliefs that have long held sway in the western tradition, concerning the topology of the human head. In this topology, the ears are imagined as holes that let the sound in, whereas the eyes are likened to screens that let no light through. Inside the head, then, it is noisy but dark. As sound penetrates the inner sanctum of being, mingling with the soul, it merges with hearing. But light is shut out. It is left to vision to reconstruct, on the inside, a picture of what the world ‘out there’ might be like. These pictures, of course, can be wrong – which is why psychologists of perception have devoted so much attention to optical illusions, compared with little or no attention to aural ones (Rée 1999: 46).

The light of being

Now it is obvious enough that when we look around we see things of all sorts. This is so obvious, indeed, that we tend to forget that we could see nothing unless we first could see. Behind the mere ordinariness of the sight of things lies the sheer astonishment of being able to see. This is what the philosopher Maurice Merleau-Ponty, in his celebrated essay on ‘Eye and mind’, called the magic – or the delirium (Merleau-Ponty 1964: 162) – of vision: the sense that at every moment one is opening one’s eyes upon a world-in-formation. For formerly blind persons whose sight has been restored by a surgical operation, and doubtless for the newborn opening their eyes for the first time, the delirium can be overwhelming. ‘The first time we see light’, wrote William James, ‘we are it rather than see it’ (James 1892: 14). Light, I contend, is another way of saying ‘I can see’. It is not merely a phenomenon of the physical world (whether treated as photons or radiant energy), nor is it a phenomenon of the interior mind. It is neither on the far side nor on the near side of the retinal surface. Rather, light is an experience. For sighted persons, it is the experience of inhabiting the world of the visible, and its qualities – of brilliance and shade, tint and colour, and saturation – are variations on this experience.

Let me present an imaginary scenario, nevertheless scripted with actual words. So far as I know, Gibson and Merleau-Ponty never met. But let us suppose that they did, on a fine summer’s day. There they are, stretched out on the grass, looking up into the sky. ‘What do you see?’ Gibson asks Merleau-Ponty. To which the latter dreamily replies: ‘I am the sky itself as it is drawn together and unified, and as it begins to exist for itself; my consciousness is saturated with this limitless blue’ (1962: 214). Gibson is unimpressed. Why, he wonders, will this Frenchman not answer the question? He had asked what his companion can see, not what
he is. And in any case, how can he claim to be the sky when he is stretched out here on the ground? Eventually, Gibson responds, ‘To me it seems that I see the sky, not the luminosity as such’ (1979: 54). Gibson’s problem, however, was that he could never figure out how the sky should be distinguished from its luminosity. This was not a problem, however, for Merleau-Ponty, who could readily respond that the sky is no less than the world of light itself, to which we open ourselves up in vision. ‘As I contemplate the blue of the sky’, Merleau-Ponty insists, ‘I am not set over against it as an acosmic subject …’ (1962: 214). To see the sky is to be the sky, since the sky is luminosity and the visual perception of the sky is an experience of light.

The sky, then, is not an object of perception. It is not so much what we see as what we see in. We see in the sky as we see in the light, because the sky is light. Indeed painters have always known this, as on their canvases they have attempted to convey the experience of the world’s coming to light. For them, as for us, the sky is not illuminated, it is luminosity itself. Moreover it is sonority too, as the musicologist Victor Zuckerkandl explained. In the experience of looking up into the sky, according to Zuckerkandl (1956: 344), lies the essence of what it means to hear, to which I would add that in this experience also lies the ecstasy of feeling. Thus what goes for vision goes for auditory and tactile perception as well. If we can see things because we first can see, so too, we can hear things because we first can hear, and touch things because we first can feel. The sight, hearing and touch of things are grounded in the experience, respectively, of light, sound and feeling. And if the former force us to attend to the surfaces of things, the latter, by contrast, redirect our attention to the medium in which things take shape and in which they may also be dissolved. Rather than thinking of ourselves only as observers, picking our way around the objects lying about on the ground of a ready-formed world, we must imagine ourselves in the first place as participants, each immersed with the whole of our being in the currents of a world-in-formation: in the sunlight we see in, the rain we hear in and the wind we feel in. Participation is not opposed to observation but is a condition for it, just as light is a condition for seeing things, sound for hearing them, and feeling for touching them.

In the mist

With these thoughts in mind, I would now like you to accompany me – at least in your imagination – to the seashore. On a wet and stormy February day I walked with a group of anthropology students from Aberdeen University the short distance from the classroom to the beach. There we stood, battered by rain and wind, while we continued (having to shout to make ourselves heard above the din) a conversation we had begun indoors concerning the perception of the landscape. Among other things, we had been reading the explorations of the archaeologist Christopher Tilley (1994, 2004) on the theme of landscape phenomenology. Tilley is rightly insistent that the landscape is not a physical constant that is simply given to empirical observation, description and measurement. It is rather given only in relation to its inhabitants, to their lives, movements and purposes, and the places where they dwell, and draws its meanings from these relations. Thus people and landscape – to recycle an overused anthropological formula – are ‘mutually constituted’. Landscapes take on meanings and appearances in relation to people, and people develop skills, knowledge and identities in relation to the landscapes in which they find themselves.

We had been puzzled, however, by a passing remark in one of Tilley’s texts. To prove his point that landscapes are not constant but vary according to the multiple perspectives of
their inhabitants, he invites us to compare the view on a clear day with a view from the same spot on a misty day. Everything looks different. Yet we would be quite wrong, Tilley argues, to conclude that the clear view discloses a reality of the landscape that is obscured when it is shrouded in the mist. Neither view is any more real than the other. To claim otherwise would be ‘to abstract that landscape from the person who perceives it’ (Tilley 2004: 12). The difference between clarity and mistiness, he seems to be saying, is to be found not in the landscape itself but in the ways people relate to it in acts of perception. And here’s the puzzle. For if that were really so, then it would take only a change in the ways people comport themselves in relation to the landscape to turn a clear prospect into a misty one, or vice versa.

As we huddled together on Aberdeen beach, in the drenching rain and howling wind, the claim that it was all down to *us* rang a little hollow! Try as we might, we could not calm the storm by any ploy of perception.

Further consideration of the matter revealed that for all his insistence on both doing and writing archaeology out of doors, the weather is conspicuous by its absence from Tilley’s account. More remarkably, it is absent from the accounts of practically every author, in anthropology and archaeology, who has set out to investigate the engagements between people and what is conventionally known as the ‘material world’. In these accounts, as we have already seen in Chapter 2, materiality is identified with everything that has – so to speak – precipitated out from the medium, with the result that the medium itself is rendered immaterial. Rainwater enters the material world only when it accumulates in puddles on the ground, and snow only when it settles. The wind can figure only as a figment of the imagination, leading armchair theorists to suppose that boats sail, kites fly and trees flex their limbs on account of some animating force – an agency – lodged within the things themselves, as solid objects. Suffused in sunlight, even the sky becomes an imaginary realm that we can inhabit only in our thoughts and dreams, while the air we breathe is dematerialised into a spiritual ether that sustains the soul, but not the material body.

In reality, of course, the landscape has *not* already congealed from the medium. It is undergoing continuous formation, above all thanks to the immersion of its manifold surfaces in those fluxes of the medium that we call weather – in sunshine, rain, wind and so on. The ground is not the surface of materiality itself, but a textured composite of diverse materials that are grown, deposited and woven together through a dynamic interplay across the permeable interface between the medium and the substances with which it comes into contact. And so, to return to Tilley, we can see that in his passing reference to a landscape in the mist – one of those rare moments when the weather makes an appearance – he presents us with a topsy-turvy world in which the weather (in this case, mist) is an emergent outcome of the mutual constitution of people and landscape, when in truth, it is the condition for such constitution. It is only because of their common immersion in the fluxes of the medium that people and landscape can engage at all. As an experience of light, sound and feeling that suffuses our awareness, the weather is not so much an object of perception as what we perceive in, underwriting our very capacities to see, to hear and to touch. As the weather changes, so these capacities vary, leading us not to perceive different things, but to perceive the same things differently. The weather, in short, is the ‘world’s worlding’ – to adopt Heidegger’s (1971: 181) expression – and as such it is not a figment of the imagination but the very temperament of being (Ingold 2010: S133).
On the beach

As the students and I gathered on the beach, on that stormy day, we looked first towards the land. Then we turned and looked out to sea. What did we see there? Before attempting an answer, let me recall Gibson’s characterisation of the terrestrial environment as comprising neither objects alone, nor only earth and sky, but ‘the earth and the sky with objects on the earth and in the sky’ (Gibson 1979: 66, see Chapter 9, p. 117). We, of course, were standing onshore. Glancing down, we saw the pebbles of the shingle on which we stood. Are pebbles, then ‘objects on the earth’? Gibson would say so, and so would we, were each of us to stoop to pick one up and, having examined it, to replace it where it lay. Yet every pebble rested upon others, which in turn rested on others beneath them. If they, too, are on the earth, then where is the earth itself? Would removing layer after layer of pebbles take us any closer to it? Or should we think of the relation between pebbles and the earth in terms of the history of their formation? After all, it is only because of their incessant pounding and grating as they are washed by the surf at high tide that pebbles have gained their rounded forms. To think of a pebble as an object is to imagine it cut off from this formative process, as though it had been placed there, already shaped, like a piece of sculpture on a plinth. Yet as a stone, ground down from a piece that must once have broken off from solid rock, does not the pebble retain a connection to the earth as intrinsic as that of a seed to its parent body? Who is to say whether it is on the earth or of it?

Standing on the shingle, it was not in practice possible to draw any kind of line between these contrary conditions. We had rather to recognise that the ground on which we stood was not really a supporting platform upon which things rest but a zone of formative and transformative processes set in train through the interplay of wind, water and stone, within a field of cosmic forces such as those responsible for the tides. This became even more apparent as we lifted our glance to the surging breakers collapsing on the shore. What we saw were not objects and surfaces, but materials in motion. Raising our eyes still further we saw waves upon waves capped with foam, gradually panning out to the level expanse of the ocean, which in turn gave way to the unrelenting grey of the sky. Against this background, we could dimly make out the wheeling forms of seabirds, but we recognised them not as objects that moved, but as movements – oftentimes accompanied by sounds – that only resolved themselves into objective forms when they came to rest, perched on one of the many breakwaters that section the beach. In short, looking out to sea we saw a world in movement, in flux and becoming, a world of ocean and sky, a weather-world. We saw a world without objects.

Sea-ing the land

Armed with this perspective, we then turned our sights back on the land. Our question was: what happens if we regard the land from the point of view of the sea? What if, instead of land-ing the sea, we try sea-ing the land? It has been conventional to assimilate the ocean to a land-based perspective, and one moreover that focuses, under the rubric of ‘landscape’, on its more solid formations and their surface configurations. Looking seawards with such a perspective, we think that we are gazing upon a seascape, conferring on waves and troughs, or on becalmed or turbulent waters, a permanence and solidity that they lack in reality (Cooney 2003). In sea-ing the land, by contrast, it is the solidity of the ground itself that is thrown into doubt. That it is also restless, in ceaseless motion and change, is – writes sailor
and philosopher Martin Dillon – ‘a lesson the sea can teach us about the earth’ (2007: 267). As we already found in the case of the shingle beach, seen from the perspective of the sea the ground is much more complex and dynamic than we might have thought. Far from being the hard surface of materiality that we had imagined, upon which all else rests, it reappears as a congeries of heterogeneous materials, thrown together by the viccissitudes of life in the weather-world. Indeed wherever we look, the ground bears witness to the liveliness of the processes that have gone on or are going into its formation – to the effects of rain, wind, frost and so on.

In a study of the ways in which perceptual experience underlies aesthetic sensibility, philosopher Arnold Berleant observes that the prevailing restlessness of the fluid environment profoundly affects ‘all the parameters that ordinarily delimit one’s terrestrial existence and, on a larger scale, even our understanding of metaphysical being’. Berleant, too, casts his eye from the ocean towards the land, and finds not only that the land undergoes continual change – ‘slow, to be sure, but nevertheless incessant’ – but also that fluidity does not end there. ‘The atmosphere is itself a fluid medium’ (Berleant 2010: 139). Thus to sea the land, in our terms, is to disclose a world without objects whose solid forms are, to varying degrees, overwhelmed by the fluxes of this atmospheric medium. Rather than being opposed, sea and land, along with the littoral that marks their perpetual dialogue, appear to be engulfed in the wider sphere of forces and relations comprising the weather-world, together subsumed under the great dome of the sky. It is in this dome, where the sun shines, storms rage and the wind blows – and not, as Gibson surmised, at the surfaces of solid objects and the ground they rest on – that ‘all the action is’ (Gibson 1979: 23). To perceive and to act in the weather-world is to align one’s own conduct to the celestial movements of sun, moon and stars, to the rhythmic alternations of night and day and of the seasons, to rain and shine, sunlight and shade. For the weather engulfs the landscape just as the sight of things is engulfed by the experience of light, the hearing of things by the experience of sound, and the touch of things by the experience of feeling.

The change in perspective from land-ing the sea to sea-ing the land corresponds rather precisely to the contrast drawn by the philosophers Gilles Deleuze and Félix Guattari between striated and smooth space (2004: 408, 524–525). Striated space, they say, is homogeneous and volumetric: in it, diverse things are laid out, each in its assigned location. To look around in striated space is, as the original meaning of skopos implies, to shoot visual arrows at their targets. Smooth space, to the contrary, has no layout. It presents, rather, a patchwork of continuous variation, extending without limit in all directions. It is an atmospheric space of movement and flux, stirred up by wind and weather, and suffused with light, sound and feeling. The eye, in smooth space, does not look at things but roams among them, finding a way through rather than aiming for a fixed target. It is an eye that is tuned not to the discrimination and identification of individual objects but to the registration of subtle variations of light and shade, and the surface textures they reveal. Whereas the landscape of striated space, closed off and apportioned, has turned against the sky, in smooth space the surfaces of the land – like those of the sea – open up to the sky and embrace it. In their ever-changing colours, and patterns of illumination and shade, they reflect its light; they resonate in their sounds to the passing winds, and in their feel they respond to the dryness or humidity of the air, depending on heat or rainfall. In smooth space, to continue with Deleuze and Guattari, ‘there is no line separating earth and sky’ (ibid.: 421). One could not exist without the other.
The haptic and the optical

In short, where landscape belongs to the order of the striated, the weather-world belongs to the order of the smooth. For Deleuze and Guattari, the archetypal denizens of smooth space were pastoral nomads who, with their herds, rode the pastures as mariners rode the waves, carried along on the windswept surfaces of sand, steppe and snow, and responding in their movements, at every moment, to real and imaginary forces, both celestial and subterranean. If, in the experience of the mariner, the world was a blend of sky and ocean, then for the nomad it was a blend of sky and earth. In this regard, the nomads’ relation to the land was quite unlike that of their agrarian counterparts amongst whom the concept of landscape first took hold. The original architects of striated space were farmers who literally shaped the land by straking it with rigs and furrows. Far from going with the flow, life for them was a matter of counteracting the friction of an immobile and often unyielding earth. Deleuze and Guattari (ibid.:524–525) compare the difference to that between felt and linen, the one matted from a swirling morass of fibres that have no consistent direction, the other woven through the regular intertwining of warp and weft. However, the modern identification of scape with the scopic – that is, of the shape of the land with its look, with form, as opposed to substance – has realigned the difference along quite another axis of contrast. This is between the haptic and the optical.

Haptic engagement is close range and hands on. It is the engagement of a mindful body at work with materials and with the land, ‘sewing itself in’ to the textures of the world along the pathways of sensory involvement. An optical relation between mind and world, by contrast, is founded on distance and detachment. Here, the shape of the land inheres no longer in its weave, nor would one find it by following the striations of its texture, as does the ploughman as he cuts the earth of his fields, or the journeyman as he wends his way, most likely by foot, along its tracks and trails. It is found, rather, by a kind of back-projection by which the world is cast as though fully formed, in appearance but not substance – that is, as an image – upon the surface of the mind. It is doubtless because the association between scape and the scopic implies such an optical projection that the modern concept of landscape (unlike its medieval precursor) is so often assumed to be tainted with visualist bias. In principle, however, this kind of projection could be mediated just as well by manual touch as by vision. This, for example, is how Descartes thought of blind touch, in his Optics of 1637. The blind, he thought, could use straight sticks to perceive the forms of objects at a distance, just as the sighted use light rays (Descartes 1988: 67). Likewise the gloved hand of the clinician, detective or curator, who handles possibly invisible objects in order to extract their form while ensuring that there should be no contact or exchange of materials across the surface of the skin, exerts an optical touch.

Conversely, haptic engagement may run along the pathways of vision as well as touch. In close-up work, the eye can be as myopically entwined in the fine grain of the world as the hand. Think of the seamstress, peering at her fabric as she draws in the threads, or the medieval scribe whose eye is caught up in the inky traces of his writing (Ingold 2007a: 92). So too, the eyes of the ploughman are close to the ground, as they line up the share with the furrow. Deleuze and Guattari are thus quite right to point out (2004: 543–544) that the opposition between the optical and the haptic cross-cuts that between eye and hand: besides optical vision and haptic touch we have optical touch as well as haptic vision. But they are wrong to assume a correspondence between the haptic/optical distinction and
that between the smooth and the striated. Between the haptic and the optical lies all the
difference between the perspective of the farmer who shapes the land close-up and that
of the painter who views the resulting scene from a distance, or – as Deleuze and Guattari
themselves observe – between ‘the ground-level plane of the Gothic journeyman’ and ‘the
metric plane of the architect, which is on paper and off site’ (ibid.: 406). But that does not,
as they seem to think, make the farmer or the journeyman a nomad! To the contrary, the
division between the haptic and the optical is a division within the striated, and distinguishes
the medieval sense of landscape from its modern derivative. This conclusion, however, leaves
us with an unresolved question. If the experience of smooth space is given neither in optical
projection nor in haptic engagement, then how should we describe it?

The atmosphere

For a possible answer, we can return to the imaginary conversation, recounted above,
between Gibson and Merleau-Ponty. For it comes down, once again, to the question of how
we perceive the sky. Gibson thought he was looking at the sky; Merleau-Ponty insisted, to
the contrary, that he was looking with it. Eyes that are open to the sky, wrote Merleau-Ponty
(1962: 317), and that know moonlight and sunlight, bring these qualities of light into their
own ways of perceiving. When they look, the sun and the moon look, since these celestial
bodies, in their luminosity, have already invaded the perceiver’s visual awareness. Similarly,
when the body feels, the wind feels, since the wind, in its currents, has already invaded the
body’s tactile awareness. And when we gathered on the beach, the students and I found that
the noise of the breakers, as they crashed on the shingle, had likewise invaded our auditory
awareness: we did not just hear them; we heard with them. Far from being disclosed to us as
targets of perception, waves, wind and sky were present as an all-enveloping experience of
sound, light and feeling – that is, an atmosphere (Böhme 1993). The breaking waves were their
sound, not objects that make a sound; the wind was its feel, not an object touched; the sky was
light, not something seen in the light. Thus in its atmospheric manifestation, smooth space
is not set over against perceivers but commingles with, and saturates, their consciousness,
wherein it is generative of their own capacity to perceive. In short, the experience of smooth
space is light, sound and feeling, not something that we obtain by their means. It is neither
optical nor haptic but atmospheric.

This leads me to two points in conclusion. The first is that we would be ill-advised to
assimilate the experience of light, sound or feeling to a landscape perspective by coining
such compound terms as lightscape (Bille and Sorensen 2007), soundscape (Schafer 1994)
or even feelingscape. These qualities of sensory experience, as I have shown, are phenomena
of the weather-world. They belong to the fluxes of the medium, not to the conformation of
surfaces. Indeed, there is something oxymoronic about compounds that couple the currents
of sensory awareness with a regime, implicit in the modernist equation of scape with the
scopic, which reduces such currents to vectors of projection in the conversion of objects into
images. Secondly, and following from this, we would be wrong to suppose that sensory
experience is embodied, or that through it, people are tied to place (Feld and Basso 1996).
We may, in practice, be anchored to the ground, but it is not light, sound or feeling that holds
us down. On the contrary, they contrive to sweep us off our feet. Light floods, sound drowns
out (as we found when we tried to converse on the beach) and feeling carries us away.
Light, sound and feeling tear at our moorings, just like the wind tears at the limbs of trees.
rooted to the earth. Far from being enfolded into the body – as the concept of embodiment would imply – they take possession of it, sweeping the body up into their own currents. Thus, as it is immersed in the fluxes of the medium, the body is enlightened, ensounded and enraptured. Conversely, a body confined to a place in the landscape, and that did not equally inhabit the sky, would be blind, deaf and unfeeling. In the words of the environmental philosopher David Macauley (2005: 307), ‘we breathe, think and dream in the regions of the air’: not on the fixed surface of the landscape but in the swirling midst of the weather-world.

I close with a brief ethnographic vignette. Nicole Revel (2005) has described how Palawan Highlanders of the Philippines have a very special relationship with birds, considering them to be their close yet ephemeral companions. Their understanding of this relationship is epitomised in the practice of flying kites. Constructed of leaves or paper with split bamboo struts, kites are regarded as the copies of birds. Flying a kite is as close as terrestrial humans can get to sharing in the experience of their avian companions. Playing the wind, flyers can feel with their hands, holding the connecting strings, what birds might feel with their wings. ‘Anchored to the earth’, as Revel puts it, Palawan kite flyers ‘dream in the air, their thrill equal to the splendour of the whirling of their ephemeral creations’ (ibid.: 407). Becoming like birds, their consciousness is launched on the same aerial currents that animate their kites, and is subject to the same turbulence. Armed with their kites, the Palawans have achieved the precise reverse of what modern art historians have achieved with the concept of landscape. Where the latter have confined the world within the ambit of its surfaces, the former, reaching out from these surfaces, have regained the openness of the atmosphere.
FOUR OBJECTIONS TO THE CONCEPT OF SOUNDSCAPE

I very much welcome the recent growth of interest in sound, the impact of which is being felt not only in my own discipline of anthropology, but also in the related fields of art, architecture and archaeology, to name just a few. But I am also concerned lest we repeat mistakes that have already befallen studies in visual culture. The ‘visual’, in these studies, appears to have little or nothing to do with what it means to be able to see. That is to say, it scarcely deals with the phenomenon of light. It is rather about the relations between objects, images and their interpretations. A study of aural culture, built along the same lines, would be about the interpretation of a world of things rendered in their acoustic forms. It has become conventional to describe such a world by means of the concept of soundscape. Undoubtedly when it was first introduced, the concept served a useful rhetorical purpose in drawing attention to a sensory register that had been neglected relative to sight. I believe, however, that it has now outlived its usefulness. More to the point, it carries the risk that we might lose touch with sound in just the same way that visual studies have lost touch with light. In what follows I will set out four reasons why I think the concept of soundscape would be better abandoned.

First, the environment that we experience, know and move around in is not sliced up along the lines of the sensory pathways by which we enter into it. The world we perceive is the same world, whatever path we take, and in perceiving it, each of us acts as an undivided centre of movement and awareness. For this reason, I deplore the fashion for multiplying scapes of every possible kind. The power of the prototypical concept of landscape lies precisely in the fact that it is not tied to any specific sensory register – whether of vision, hearing, touch, taste or smell. In ordinary perceptual practice these registers cooperate so closely, and with such overlap of function, that their respective contributions are impossible to tease apart. The landscape is of course visible, but it only becomes visual when it has been rendered by some technique, such as of painting or photography, which then allows it to be viewed indirectly, by way of the resulting image, which, as it were, returns the landscape back to the viewer in an artificially purified form, shorn of all other sensory dimensions. Likewise, a landscape may be audible, but to be aural it would have to have been first rendered by a technique of sound art or recording, such that it can be played back within
Four objections to the concept of soundscape

We should not be fooled by art historians and other students of visual culture who write books about the history of seeing that are entirely about the contemplation of images. Their conceit is to imagine that the eyes are not so much organs of observation as instruments of playback, lodged in the image rather than the body of the observer. It is as though the eyes did our seeing for us, leaving us to (re)view the images they relay to our consciousness. For the active looking and watching that people do as they go about their business, visual theorists have substituted regimes of the 'scopic', defined and distinguished by the recording and playback functions of these allegorical eyes. Although, as we saw in the last chapter, the apparent etymological kinship between the scopic and the 'scapes' of our perception is spurious, such a connection is commonly presumed. Thus in resorting to the notion of soundscape, we run the risk of subjecting the ears, in studies of the aural, to the same fate as the eyes in visual studies. This is my second objection to the concept. We need to avoid the trap, analogous to thinking that the power of sight inheres in images, of supposing that the power of hearing inheres in recordings. For the ears, just like the eyes, are organs of observation, not instruments of playback. Just as we use our eyes to watch and look, so we use our ears to listen as we go forth in the world.

It is of course to light, and not to vision, that sound should be compared. The fact, however, that sound is so often and apparently unproblematically compared to sight rather than light reveals much about our implicit assumptions regarding vision and hearing, which, as I have already explained (p. 128), rest on the curious idea that the eyes are screens that block out the light, leaving us to reconstruct the world inside our heads, whereas the ears are holes in the skull that let the sound in so that it can mingle with the soul. One result of this idea is that the vast psychological literature on optical illusions is unmatched by anything on the deceptions of the ear. Another is that studies of visual perception have had virtually nothing to say about the phenomenon of light. It would be unfortunate if studies of auditory perception were to follow suit, and to lose touch with sound just as visual studies have lost touch with light. Far better, by placing the phenomenon of sound at the heart of our inquiries, we might be able to point to parallel ways in which light could be restored to the central place it deserves in understanding visual perception. To do this, however, we have first to address the awkward question: what is sound? This question is a version of the old philosophical conundrum: does the tree falling in a storm make any sound if there is no creature present with ears to hear it? Does sound consist of mechanical vibrations in the medium? Or is it something we register only inside our heads? Is it a phenomenon of the material world or of the mind? Is it 'out there' or 'in here'? Can we dream it?

It seems to me that such questions are wrongly posed, in so far as they set up a rigid division between two worlds, of mind and matter – a division that is reproduced every time that appeal is made to the materiality of sound. Sound, in my view, is neither mental nor material, but a phenomenon of experience – that is, of our immersion in, and commingling with, the world in which we find ourselves. Such immersion, as the philosopher Maurice Merleau-Ponty (1964) insisted, is an existential precondition for the isolation both of minds to perceive and of things in the world to be perceived. To put it another way, just as light is another way of saying 'I can see' (see Chapter 10, p. 128), so sound is another way of saying 'I can hear'. If this is so, then neither sound nor light, strictly speaking, can be an object of our perception. Sound is not what we hear, any more than light is what we see. Herein lies my
third objection to the concept of soundscape. It does not make sense for the same reason that a concept of ‘lightscape’ would not make sense. The scaping of things – that is, their surface conformation – is revealed to us thanks to their illumination. When we look around on a fine day, we see a landscape bathed in sunlight, not a lightscape. Likewise, listening to our surroundings, we do not hear a soundscape. For sound, I would argue, is not the object but the medium of our perception. It is what we hear in. Similarly, we do not see light but see in it (Ingold 2000a: 265).

Once light and sound are understood in these terms, it becomes immediately apparent that in our ordinary experience, the two are so closely involved with one another as to be virtually inseparable. This involvement, however, raises interesting questions that we are only beginning to address. How, for example, does the contrast between light and darkness compare with that between sound and silence? It is fairly obvious that the experience of sound is quite different in the dark than in the light. Does the experience of light likewise depend on whether we are simultaneously drowned in sound or cocooned in silence? These kinds of questions bring me to my fourth objection to the concept of soundscape. Since it is modelled on the concept of landscape, soundscape places the emphasis on the surfaces of the world in which we live. Sound and light, however, are infusions of the medium in which we find our being and through which we move. Traditionally, both in my own discipline of anthropology and more widely in fields such as cultural geography, art history and material culture studies, scholars have focused on the fixities of surface conformation rather than the fluxes of the medium. They have, in other words, imagined a world of persons and objects that has already precipitated out, or solidified, from these fluxes (see Chapter 2, p. 26). Going on to equate the solidity of things with their materiality, they have contrived to dematerialise the medium in which they are primordially immersed. Even the air we breathe, and on which life depends, becomes a figment of the imagination.

Now the mundane term for what I have called the fluxes of the medium is weather. So long as we are – as we say – ‘out in the open’, the weather is no mere phantasm, the stuff of dreams. It is, to the contrary, fundamental to perception. We do not perceive it; we perceive in it (Ingold 2005a). We do not touch the wind, but touch in it; we do not see sunshine, but see in it; we do not hear rain, but hear in it. Thus wind, sunshine and rain, experienced as feeling, light and sound, are essential to our capacities, respectively, to touch, to see and to hear (see Chapter 10, p. 130). In order to understand the phenomenon of sound (as indeed those of light and feeling), we should therefore turn our attention skywards, to the realm of the birds, rather than towards the solid earth beneath our feet. The sky, as we saw in the last chapter, is not an object of perception, any more than sound is. It is not a thing we see. It is rather luminosity itself. But it is sonority too. Recall the argument of the musicologist Victor Zuckerkandl (1956: 344), that if we really want to know what it means to hear, we should gaze into the sky. If he is right, then perhaps our metaphors for describing auditory space should be derived not from landscape studies but from meteorology.

Let me conclude with a couple of points that address not the concept of soundscape itself but rather its implied emphasis on, first, embodiment, and second, emplacement. I have mentioned the wind, and the fact that to live we must be able to breathe. Wind and breath are intimately related in the continuous movement of inhalation and exhalation that is fundamental to life and being. Inhalation is wind becoming breath, exhalation is breath becoming wind. At a recent anthropological conference on Wind, Life, Health (Low and Hsu 2008), the issue came up of how the wind is embodied in the constitution of persons