6. Cutting nature at the joints: metaphor and epistemology in the science wars

Postmodernism’s disavowal of meta-narratives and universal truth claims has recently manifested itself in a series of debates that has become known as the ‘science wars’: scientists, cultural theorists, sociologists, and philosophers in dispute over the status of scientific knowledge (Collins and Pinch 1993; Franklin 1996; Levins 1996; Martin 1996; Rose 1996; Shapin and Schaffer 1985; Snow 1964; Sokal 1996). Is science a disinterested reflection of the world as it really is or a discourse whose findings are heavily influenced by the interests and prejudices of those who work within it? Strong objections are raised by the realists in the debate to the sociologists’ metaphor of scientific knowledge as a ‘construction’. What the sociologist understands by this is that scientific theories are constituted by the perspectives and research opportunities which are made available within a particular community. However, the realist reacts to the more subjective, ‘fabricated’ associations of ‘construction’ and interprets the relativism of the sociologist to mean that it is the scientific community and not nature which determines where ontological divisions lie. Do we create or do we discover truths about the world? Surely, the realist demands, it cannot be the former? It is in this context that Richard Dawkins’s often quoted remark – ‘show me a relativist at 30,000 feet and I will show you a hypocrite!’ – is made (quoted in Franklin 1996: 143).

This chapter argues that much of the epistemological conflict which makes up the science wars is attributable to the metaphors that are at work in the competing theories of knowledge. Two cases I cover in detail are ‘cutting nature at the joints’ and the
concept of ‘world’ used as a metonym. In both cases, it is ambiguous whether what is being described is the (noumenal) world as it is in itself or the (phenomenal) world as it is accessed and made available to us through perception. My argument though is not against metaphor; I am not accusing metaphor of disrupting the passage of rational thought. Rather, I am claiming that more attention needs to be paid to the way in which figurative language functions at the epistemological level and, in particular, to the way in which the same metaphor can lend itself to conflicting epistemologies.

Explanations of how knowledge ‘fits’ the world are invariably metaphorical, for example, talk of knowledge mirroring the world, knowledge as a construction, correspondence and coherence theories of truth, receiving sensory impressions or sense-data. The reason for this, I argue in the second part of the chapter, is that there is a fundamental two-way relationship between metaphor and epistemology. On the one hand, epistemology is metaphorical in the sense that the task of describing how our faculties mesh with the world requires us to make claims which exceed what is given in experience and which therefore can only be articulated by drawing on external areas of discourse. But on the other, metaphor itself has been ‘epistemologized’ by recent research in philosophy and psychology, that is to say, metaphor has been shown to be central to the mapping and organizational procedures we employ in perception at large. What this two-way relationship means, I suggest, is that metaphor acquires an epistemological significance which (a) goes some way towards explaining why it is that the same metaphor can adapt itself to opposing theories of knowledge, and (b) can guide epistemological thought through the science wars in a fashion which avoids the binarism of phenomenal appearance and noumenal reality. As I show in the following chapter, such guidance already exists in the philosophy of science, and has been plotted by Heidegger and Bachelard along the lines of a single family of metaphors.

METAPHOR AND THE SCIENCE WARS

In the science wars, the deepest epistemological lines are drawn between ‘glass mirror epistemology’ (GME)\(^1\) and the strong sociology of knowledge (SSK). The former is
essentially a version of direct realism and rests upon a belief in the transparency of perception. Reality, it is assumed, exists in itself with its own inherent structure independently of any perceiver, but is directly (or indirectly, via apparatus) open to view and knowledge can be derived by naming the various, distinct natural kinds which the scientist discovers through increasingly refined observation. This position is tied to the emergence of science as a distinct discipline in the seventeenth century. In this time, the senses are affirmed as true and reliable channels of information on the world and, as a result, the new empiricist mind is promised the possibility of accessing or ‘reading’ the secrets of nature. We find this sentiment in Bacon’s ‘alphabet of nature’ and Galileo’s concept of the universe as a ‘great book... written in the language of mathematics’ (Arbib and Hesse 1986: 149).

SSK theorists contest GME. The interests of SSK are, as the title suggests, primarily social and political: to disclose and emphasize the moral and political concerns which, it is claimed, have been active in determining what we accept as knowledge and, more especially, what we accept as scientific knowledge. According to SSK, two unwarranted assumptions are made by GME: (1) the world is immediately and unproblematically open to view, and (2) (as Franklin makes the point) ‘things can be known in and of themselves through a method of observation and description that does not leave a mark upon its objects’ (1996: 142). In these respects, science views the world from a God’s-eye point of view; it maintains a perspective which is not a perspective. This is where the danger lies for, according to Franklin, it is the denial of the perspectival and partial basis of science ‘that attempts to render invisible and inaccessible to scrutiny or questioning exactly how that perspective works, what it includes and excludes, and how that inclusion or exclusion is a cultural effect’ (1996: 151). Examples of the value-ladenness of science cited by SSK theorists include the ubiquity of chemical therapy in medicine and farming as expressions of the interests of the chemical industry (Levins: 107), the assertion that the female body is of merely secondary or marginal importance in anatomy, and the privileging of ‘scientific discovery’ over the human or animal suffering generated by research (Martin 1996: 46).
A key SSK text is Shapin and Schaffer’s *Leviathan and the Air-Pump* (1985). This argues that it was political sensitivity rather than epistemic success which led to Boyle’s theory of a vacuum winning over Hobbes’s theory of a plenum in the seventeenth century. Boyle argued that it would be physically possible to create a vacuum (an absence of all matter) given the right conditions and apparatus, whereas Hobbes maintained that every portion of nature must contain some form of material substance, which he referred to as a ‘plenum’. For a period of time, the vacuist and plenist theories both ‘saved appearances’, that is, both Boyle’s and Hobbes’s ontologies fitted the observed phenomena. However, according to Shapin and Schaffer, Boyle’s theory was ultimately accepted not because it provided a better fit with the world but because it was felt to be in keeping with ‘the settlement and protection of a certain kind of social order’ (1985: 342). The openness and consensus of opinion which were characteristic of Boyle’s empiricist scientific method were perceived to be congruent with ‘civil stability and peace’ and ‘the polity that emerged in the Restoration’ (1985: 342).

Epistemologically, the contrast between GME and SSK is akin to the opposition between realism and anti-realism. Although the variety of realisms within analytic philosophy and the philosophy of science arguably make the realism–anti-realism distinction an oversimplification, for example, metaphysical, semantic and epistemic, as Psillos describes them (1999: xix)), the various realisms nevertheless share a commitment to a mind-independent reality underlying appearances which is either directly or indirectly knowable through appearances, and it is the contrast between this commitment and the lack of it within anti-realism that I am interested in. Realism, in its strongest, metaphysical form, as Putnam characterizes it (although it is not his position), adopts the perspective of the God’s-eye point of view alongside GME. It understands truth to be ‘some sort of correspondence relation between words or thought-signs and external things and sets of things’ (1981: 49). It maintains what Putnam calls a ‘similitude theory of reference’: ‘the relation between the representations in our minds and the external objects that they refer to is literally a similarity’ (1981: 57). Ideally, no differences between the properties we perceive and the properties the object has in itself should emerge in the process of coming to know the object. The empiricist notion of a
sense *impression* – originally described by Aristotle in *De Anima* as the impress of a signet ring in wax – is one version of this ideal (Aristotle 1987: 424a).

Against this, anti-realism is a form of subjective Kantianism: instead of the content of our thoughts being determined by external objects impinging upon them, it is the nature of our concepts which determine the shape of reality. Kuhn’s commentary on Lavoisier is a good illustration of the position:

In learning to see oxygen… Lavoisier also had to change his view of many other more familiar substances. He had, for example, to see a compound ore where Priestley and his contemporaries had seen an elementary earth, and there were other such changes besides. At the very least, as a result of discovering oxygen, Lavoisier saw nature differently. And in the absence of some recourse to that hypothetical fixed nature that he ‘saw differently’, the *principle of economy* will urge us to say that after discovering oxygen Lavoisier worked in a different world.

(Kuhn 1962: 118)

As a result of discovering oxygen, the methods and vocabularies which constitute Lavoisier’s practice as a scientist are completely redefined. The processes and objects with which he is dealing are therefore different, and so ‘the principle of economy’ urges us to say he is working ‘in a different world’. In support of this is Goodman’s claim that the concept ‘world’ should be understood as shorthand for ‘descriptions and depictions of the world’, since a world *undescribed, undepicted or unperceived* is something which (according to Goodman) cannot enter our conceptual reckoning (Goodman 1978: 4).

It is easy to see how friction between the two positions is generated. SSK argues that it is not ‘the world’ or not just ‘the world’ which determines theory-choice but social, cultural, extra-scientific affairs. This conclusion is reached on the understanding that *necessarily* there cannot be a direct, transparent ‘looking at the world’, Franklin’s ‘looking through a toilet paper tube’ (1996: 143). This utterly contradicts GME, cancels altogether the notion that our knowledge is, *first and foremost*, a reflection of the way the
world is. In this way, SSK approaches anti-realism. Nature’s joints are either non-existent or sufficiently malleable to the degree that the categories of entity we accept as existent are determined by contingent, independent factors. The claims that science always works with a particular interest and from a particular cognitive perspective are taken to imply the denial of the existence of self-similar objects or, in Putnam’s idiom, self-identifying objects: ‘objects that intrinsically correspond to one word or thought-sign rather than another’ (Putnam 1981: 51). In other words, objects which, because of their self-similar, self-evident nature, cannot help but direct the scientist towards defining her concepts so that they are in point-to-point correspondence with them.

Metaphor is by no means an innocent bystander in all of this. Not only are key epistemological concepts metaphorical (as I illustrate in my introduction), but also the appearance of metaphors in scientific theories has been taken by some as a test case of whether (with GME) new scientific entities are discoveries from a range of pre-existent, self-similar objects or (with SSK) constructions made as a result of the scientific mind’s increasingly refined fashioning of nature. The exchange between Richard Boyd and Thomas Kuhn is a good example (Boyd 1979; Kuhn 1979). Boyd’s intention is to show how metaphor can help us discover or grant us ‘epistemic access’ to new natural kinds. Epistemic access, for Boyd, qualifies the success with which our categories acquire, assess, refine and communicate knowledge about the entities or purported entities to which they refer. In this respect, Boyd claims, metaphors can function as ‘a sort of catachresis’ in science, that is to say, ‘they [can be] used to introduce theoretical terminology where none previously existed’ (1979: 357). If a metaphor enables sustained information gathering about a presumed or partially understood natural kind, Boyd reasons, then ‘the only epistemologically plausible explanation’ is that the metaphor in question refers (1979: 401). On this account, metaphor is granted a referential value and, as a result, made consistent with the causal realist project of accommodating language ‘to the causal structure of the world’ or, as Boyd puts it, ‘the task of arranging our language so that our linguistic categories “cut the world at the joints”’ (1979: 357). He gives as examples tropes from cognitive psychology drawn from the terminology of computer science and information theory, e.g. ‘the claim that thought is a kind of “information processing” and that the brain is a sort of
“computer”” and ‘the suggestion that certain motoric or cognitive processes are “preprogrammed”’ (1979: 360).

However, the epistemological value of metaphor for Kuhn is not one of discovery but of creation. The problem with Boyd’s idea that metaphors can help to identify natural kinds, Kuhn asserts, is it assumes that ‘nature has one and only one set of joints to which the evolving terminology of science comes closer and closer with time’ (1979: 417). This, Kuhn thinks, fails to acknowledge that the world and nature are themselves, to some extent, constituted by theory and language. Kuhn favours an ontology ‘without “things in themselves” and with categories of the mind which could change with time as the accommodation of language and experience proceeded’ (1979: 418-419). Such a view, he adds, need not make the world ‘less real’ (1979: 419). Metaphor contributes to this ontological diversity, Kuhn argues, because it is forever redefining conceptual boundaries. The effect of combining two semantic fields in a metaphor, he suggests, is that both regions are never seen in quite the same way again, their outlines are completely reconfigured. Our linguistic divisions, Kuhn maintains, far from being governed by divisions in nature, are constantly open to renewal thanks to the highlighting of new aspects and features that comes with metaphorical juxtaposition.

The way in which the terms of the science wars are set would seem to preclude the possibility of any resolution. Any attempt to offer a response will inevitably have to adopt some of the assumptions of one side and so will be dismissed by the other as partisan. For example, to argue for the necessarily perspectival nature of perception (as SSK does) will be taken by the realist as simply another assertion of anti-realism. Alternatively, it could be argued against SSK (as Norris makes the point), that the historical contexts of discovery must not be confused with the scientific context of justification (Norris 1997: 33). That is to say, the procedures for either supporting or falsifying a hypothesis ensure that the way reality appears to the scientist is not wholly a product of her historically- and culturally-rooted conceptual scheme. But the SSK theorist can reply to this by observing that whatever is brought forward as evidence will have been selected from a range of possible phenomena and, by virtue of this selection process, will already be affected by certain ideological determinants. On this account,
even appeals to experimentation and the evidence of the senses – pivotal to scientific method – cannot avoid the conceptual organization present in experiment design and the determination of what is and is not significant. Some might see the debate as concerned merely with whether our theories talk about ‘the world’ or about ‘our perspective on the world’. Rorty (1980, 1982), in his typically dismissive manner, would argue that, either way, it doesn’t really matter: whether we think we are dealing with reality as it is or reality as it appears to us does not alter the fact that it is the reality we have to deal with in constructing a better existence. But there is more at stake here. Not only is this one of the oldest disputes in the history of epistemology (although Rorty would take the lack of resolution as an indication of its vacuity), but it is also fundamental to the idea that there is a reality which transcends and resists our judgment in some way; things can be otherwise than they seem to be. Even if one does not value epistemology, it ought to be recognized that epistemological notions of concept- or culture-transcendent realities are central to debates regarding what is morally and politically right.

THE REALISM AND ANTI-REALISM OF ‘CUTTING NATURE AT THE JOINTS’

One reason for the polarized nature of the debate, I suggest, is the metaphorical basis of the terms at work in it. As Dummett observes, the realism–anti-realism contest requires us ‘to choose between two metaphors, two pictures’ (Dummett 1978: 229). His comments are made in relation to the philosophy of mathematics but apply equally to epistemology and the philosophy of science:

The platonist metaphor assimilates mathematical enquiry to the investigations of the astronomer: mathematical structures, like galaxies, exist, independently of us, in a realm of reality which we do not inhabit but which those of us who have the skill are capable of observing and reporting on. The constructivist [or anti-realist] metaphor assimilates mathematical activity to that of the artificer fashioning objects in accordance with the
creative power of his imagination. Neither metaphor seems, at first sight, especially apt, nor one more apt than the other: the activities of the mathematician seem strikingly unlike those either of the astronomer or of the artist. What basis can exist for deciding which metaphor is to be preferred?

(1978: 229)

Dummett, as an anti-realist, opts for the artificer metaphor, although he doesn’t state this explicitly. However, while choosing a metaphor will place us neatly on one side of the divide or the other, it will also overlook a more fundamental respect in which metaphor is active epistemologically. Although the metaphors behind the realism–anti-realism opposition are acknowledged, what is not recognized is that they are also responsible for the polarized nature of the contest, the fact that it takes place as an oscillation between poles, with little or no sign of resolution. Certain metaphors within the science wars sustain the oscillation because they lend themselves to the epistemologies of both realism and anti-realism. This, I suggest, is due to the range of images and associations permitted by a metaphor giving both sides the room to find an interpretation which takes the metaphor in their particular direction. Two examples of such stretchable metaphors are the notions of ‘world’ and ‘cutting nature at the joints’. Both accommodate, on the one hand, the realist’s reference to reality as it is in itself and, on the other, the anti-realist’s notion that reality is shaped and organized by our conceptual framework. Let us examine how these conflicting interpretations arise.

The suggestion that ‘world’ might be used as a piece of figurative language in the context of epistemology needs some explanation. Both sides in the debate try to explain the truth or objectivity of knowledge by reference to the world or a world. The realist is committed to the notion that knowledge consists of the discovery of truths about the world, whereas the anti-realist talks of the creation of worlds. How are we to understand the notion of ‘a world’ here? Is the anti-realist’s concept of ‘world’ the same as the realist’s? Difficulty emerges because the concept can be taken either as an ontological reference to reality as it is in itself or as an epistemological reference to the world as we experience it to be. This has the effect of making the concept of ‘world’ a metonym: a
term which refers to its object not directly, by individuating it as a whole, but instead by denoting either a particular part of its object, e.g. ‘crown’ as a reference to the monarchy, or by referring to a greater whole, of which the object is a part, e.g. ‘France’ as a reference to the country’s football team. ‘World’ is metonymical in as much as talk of ‘the world as it appears’ is still a reference to the world (part for whole), and talk of ‘the world as it is in itself’ is undeniably linked to our perception of it (whole for part), if only to acknowledge that it is our cognitive efforts which have enabled us to achieve this level of impartiality. Both forms of talk are descriptions of the same thing – our knowledge of the world. To adopt Frege’s idiom: they have the same referent, but their senses and, therefore, their value and (philosophical) associations are different.²

Much of the ontological vehemence of Kuhn’s writing trades on the metonymical properties of ‘world’. Kuhn is considered an ontological relativist (and, therefore, an anti-realist) because of his claim that, after a change in its theoretical paradigm, a scientific community is ‘working in a different world’. One example of this can be found in his commentary on Lavoisier (quoted above) when he suggests that ‘in the absence of some recourse to that hypothetical fixed nature that he “saw differently”, the principle of economy will urge us to say that after discovering oxygen Lavoisier worked in a different world’ (1962: 118). The metonymical alternatives are brought into sharp relief here: ‘world’ as a ‘hypothetical fixed reality’ or ‘world’ as ‘nature that is seen differently’, a world in itself versus the world as it appears to be. In this case, as I indicate above, ‘world’ is used by Kuhn above to mean ‘our experience of the world’ because, according to him, ‘the principle of economy’ urges us to do so. However, elsewhere, Kuhn switches to the other pole of the metonym. Discussing the incommensurability of Newtonian and relativistic dynamics, Kuhn argues that it is impossible to show Newton’s laws to be a limiting case of Einstein’s because the passage to the limit involves altering ‘the fundamental structural elements of which the universe to which they apply is composed’ (1962: 102). Here Kuhn is referring to the world in itself: Newton’s and Einstein’s paradigms are incommensurable because the ways in which their fundamental structural elements apply to the one universe are different. This is confirmed in the next paragraph when Kuhn suggests that a paradigm shift creates the
need only ‘to change the meaning of established and familiar concepts’ and therefore ‘the conceptual network through which scientists view the world’ (1962: 102-103).

On a more general note, it could be argued that the ‘world in itself’ component of the metonym is itself figurative in origin. The empiricist accounts of Locke (1997) and Berkeley (1988) draw attention to this. Both observe that the notion of an underlying substance or reality is primarily a metaphor of support, based on the many relations of support which are perceived in daily life, such as pillars supporting a building (Locke 1997: 2.13.16; Berkeley 1988: §16). Anti-realism’s rejection of a reality behind appearances is taken to an extreme by Berkeley. To conceive of a thing in itself which exists independently of any observer, Berkeley argues, is impossible:

> what is all this, I beseech you, more than framing in your mind certain ideas which you call books and trees, and at the same time omitting to frame the idea of anyone that may perceive them? But do not you yourself perceive or think of them all the while?

(1988: §23)

The thing in itself, it is claimed, is first and foremost an image that tries to conceal its status as an image: a landscape or a room devoid of any perceiving consciousness but which nevertheless retains all the attributes which allow it to be perceived as the thing it is. But this can only be done if we overlook the presence of the consciousness that is holding the image. Thus, even when the realist thinks he is seeing the world as it is, according to this radical anti-realism, the ‘as it is in itself’ is itself a notion that cannot be divorced from figurative thought.

‘Cutting nature at the joints’, as we have seen in the Boyd–Kuhn exchange, is also popular as a metaphor for the objectivity of our knowledge claims. The implication is that the distinctions we make in our vocabulary correspond to the differences in kind that exist in nature. The metaphor is originally Plato’s and occurs in the *Phaedrus*, interestingly enough, in a section which discusses the relationship between rhetoric and dialectic (Plato 1973: 271). The rhetorician, Socrates argues, directs his attention to the
soul, and a good speaker will know the different types of soul and the different types of speech which correspond to them. However, in order to practice rhetoric successfully, Socrates advises Phaedrus, a knowledge of dialectics is also required, since *it is only through dialectical method* – ‘the ability to divide a genus into species,... observing the natural articulation, not mangling any of the parts, like an unskilful butcher’ – that the rhetorician can come to know the different parts of the soul (1973: 265).

Like the ‘world’ metonym, the ‘joints’ metaphor can also be interpreted either ontologically or epistemologically. Reading it ontologically, as the realist would, the body represents the world as it is in itself: a domain immediately open to view and occupied by self-similar entities that interact with each other in set, specific ways, just as a body consists of limbs and organs interacting in certain ways. Knowledge of its constitution, it is assumed, can be read off from it in the form of representations that collectively depict every conceivable arrangement and interaction of parts, both in terms of posture and the operation of the internal organs. The mind, according to this view, is not free to devise its own distinctions; nature’s joints are set in the same way that a leg will prefer to flex at the knee and ankle and not half-way along the fibula.

‘Cutting nature at the joints’ though can also be applied epistemologically by the anti-realist in as much as the incisions we make will, in part, be a reflection of our capacity to make cuts. This, I propose, turns the body into a metaphor for Kant’s theory of knowledge: the body is used not as a reference to the world but as a reference to the way in which our cognitive faculties and instruments interact with the world. The nature and organization of reality is independent of us in the sense that the constituents of the world are restricted in the way they appear or respond to us; the way objects appear to us is *created but not wholly determined* by our perspective or intervention. The resistance or counter-pressure which the world gives to perception is comparable to resistances and restrictions in a body’s movement. Here ‘joints’ refers not to divisions in an inert body but, instead, to the way a body can or might want to move in response to a stimulus, for example, in a dance. The idea that a leg will prefer to flex at the knee and ankle and not half-way along the fibula corresponds on this account *not* to a division in a mind-
independent nature but to the fact that a certain meshing of concept and intuition has to take place for perception to be possible at all.

To give a particular example of a ‘jointed’, Kantian epistemology, we can do no better than turn to Merleau-Ponty (1962, 1968). His phenomenological theory of knowledge asserts that it is the jointed nature of the human body which grants us the possibility of being able to perform any cognitive act. However, what Merleau-Ponty understands by the ‘body’ is not what we ordinarily associate with the term. The body, he argues, is not an empirical object, one thing among others in the world, but an ontological condition: a framework of intentionality whereby consciousness and the world are opened-up for each other.

This requires some exposition. In setting out this background, it might seem that I am veering away from the topic of epistemology in the science wars, but the detail is necessary in order to appreciate how the concept of a joint or jointedness can express the active nature of subjectivity in perception. Phenomenology develops the Kantian thesis that reality and the subject’s perception of it are interconnected. Another way of saying this is that experience is intentional: experience is necessarily experience of something. For there to be experience, there has to be both the sense of subjective awareness that experience is being had and the ‘counter-pressure’ sense of a ‘something other’ that is being encountered. What is important to note is that these kinds of awareness are two sides of the same coin; they both emerge as part of the same world-creating process. The location of this process, Merleau-Ponty argues, is the body: ‘my body is the fabric into which all objects are woven, and it is, at least in relation to the perceived world, the general instrument of my “comprehension”’ (1962: 235). It is in this sense that the body is an ontological body schema: a framework through which the world and conscious experience of the world are brought into being for each other. All sensory experience comes to us through the body but it is only because the body is an object which moves about in the world in a particular way that our sensory experiences, as bodily events, can be located within a unified framework. In order to make a particular range of sense experience available to us, the body must belong to a world in which it can contextualize the information received. The exploration of my hand and what it will
teach me, Merleau-Ponty writes, can only open onto a tactile world if ‘my hand takes its place among the things it touches, is in a sense one of them, opens finally upon a tangible being of which it is also a part’ (1968: 133). For example, when I perceive a cube, I never see it all at once, but I am able to conceptualize it as a regular six-sided solid because, by rotating the cube in my fingers, the rotation in my fingers is an action in space which allows me to orient the successive stages of the experience as a whole cube.

This represents a ‘jointed’ epistemology in as much as what we perceive as divisions between kinds in nature are shown in actual fact to be bound up with our status as fundamentally jointed beings, from the flexing of limbs to the visual acuity which enables us to distinguish between different colours. Whereas a joint, from a realist perspective, refers to a division between self-similar kinds in a mind-independent world, from the point of view of Merleau-Ponty’s ‘embodied’ anti-realism, it is conceptualized as the basic ontological articulation or interlocking out of which experience and the world-which-is-experienced arise. This is the distinctly Kantian aspect of the joints metaphor. As I explain above, experience, for Kant, is necessarily experience of a world; the orderliness of subjective awareness has the same root as the compartmentalizability of the world into graspable, understandable objects. What Merleau-Ponty’s theory of embodiment demonstrates is that this divisibility or intelligibility of experience and the world is precisely the body schema’s jointedness: the network of relationships and cross-referrals necessary for subjectivity to open onto a world and to locate or contextualize what it finds there.

KANT AND THE METAPHORICAL NATURE OF EPistemOLOGY

What then follows from the fact that the ‘world’ and ‘joints’ metaphors can be taken as expressions of both realism and anti-realism? The epistemological and ontological leeway which they permit would seem to support the claim, often made in the history of philosophy (e.g. by Plato and Locke), that figurative language obstructs clear, rational thought. However, I don’t think it is merely a case of metaphor waywardly
exacerbating the opposition between realism and anti-realism. Rather, we face these difficulties, I propose, because the task of epistemology is itself fundamentally metaphorical.

Epistemology necessitates a looking down on oneself from above, an attempt to view how one views, a double perspective which, it seems to me, can only be achieved through metaphor. We are never in a position to describe fully the nature of our cognitive acquaintance with the world, it could be claimed, because we can never extricate ourselves fully from our form of perception in order to view the meshing process from above, so to speak. This is one of the problems Kant addresses in the *Critique of Pure Reason* (1929): how to explain the possibility of perception given that we can never exceed a particular form of perception. As he argues in the transcendental deduction, the conditions of possibility of subjectivity are at one and the same time the conditions of possibility of objectivity, which is to say that perception is only possible because our cognitive faculties necessarily apply to the world, organizing and shaping it for us (1929: A95-130, B129-169; in particular A108). Because the conditions under which perception is possible are already ones of active engagement, it is impossible for the epistemologist to step outside the process in order to examine the components of perception when they are in a restful state; Kant situates the noumenon as a limiting concept precisely to indicate the impossibility of knowledge beyond the limits of experience (1929: A139-140, B178-179). It is this predicament which gives epistemology its metaphorical dimension. Without a field of its own that is open to direct inspection and, therefore, without a vocabulary that would correspond to this God’s-eye view, epistemology can only proceed by drawing its terms metaphorically from other areas of discourse. This would seem to go some way towards explaining the prominence of metaphorical concepts within epistemologies, such as mirroring, impression, sense-datum, correspondence, coherence, etc.

Furthermore, the lowest common denominator of epistemology is the concept of independence: as Devitt puts it, the ‘starting place’ for epistemology is the question of ‘the independence of what exists from theories and theorists’ or, in other words, the question of where one thing (reality) ends and another thing (the representation of
reality) begins (1997: 233). But, as far as Kant is concerned, reality and our perception of it, at a fundamental level, cannot be separated, since the conditions of possibility of one are also the conditions of possibility of the other. This grants Kant’s epistemology a second metaphorical aspect, in as much as metaphor is the conjunction of those categories or domains which we normally regard as separate or independent (i.e. in Kant’s case, concept and intuition or subject and object). If we plug this Kantian, metaphorical intertwining back into the science wars, then the aporetic switching backwards and forwards between the realist’s noumenon and the anti-realist’s phenomenon – ‘Is this the world as it is in itself or the world as it is carved up by us?’ – becomes a particular instance of the metaphorical action whereby two concepts exist in an irrevocably integrated state rather than standing as mutually exclusive and isolatable categories.

This is a proposal though that I can imagine some will find hard to accept, especially the realist, since it seems to reduce our capacity for rational, cognitive insight to the mere formation of images and metaphors. However, what such a response fails to consider is the extent to which metaphor has been ‘epistemologized’ or made perceptually significant in philosophy and psychology over the past few decades (Kittay 1987; Lakoff and Johnson 1999; Ortony 1979). While it cannot be claimed that all the research in these areas is pointing in the same direction or making consistent and confirmatory claims, there is nevertheless the shared recognition that our capacity for creating metaphors is central to the mapping and organizational processes we employ in perception at large. On this account, far from being a muddier of truth, metaphor is theorized as an operation which is constitutive of truth or at least constitutive of the possibility of the conceptual relationships which allow truth to be determined. Thus, in suggesting that epistemology itself is fundamentally metaphorical, I am in no way making the theory of knowledge simply a kind of poetry or a kind of writing. Rather, my point is that epistemology is enabled by the cognitive possibilities that such metaphorical thinking brings, for example, with Plato, assessing how a particular object can be thought of as ‘sharing’ the form of its universal template (1987: 452c) or, with Locke, exploring how knowledge of the world can be constructed from sensory ‘impressions’ or ‘simple ideas’ (1997: 2.1.6; 2.2.1).
By showing that the epistemological conflict between realism and anti-realism is attributable to the metaphors at work in their theories of knowledge, and by offering a Kantian explanation for why their epistemologies operate in this way, it could be objected that I am locating myself wholly within the anti-realist camp and that therefore my analysis amounts to nothing more than a partisan contribution to the wars, an argument in favour of anti-realism and SSK. Such an assessment, I admit, is inevitable, primarily because one of the principles of realism is that it is possible to talk about the world possessing a structure independent of any form of perception and this is, in effect, to exclude from consideration by definition the cognitive predeterminants responsible for granting the observer perceptual access to the world in the first place. Furthermore, by presenting the concept of “world” as a metonym above, I am committed to the view, with Berkeley, that the notion of the “in itself” cannot be divorced from metaphor and our capacity for producing images. Thus, as I have already intimated, it would seem that any attempt to adopt a perspective on the science wars which could lessen the conflict between the two sides or offer some hope of reconciliation cannot avoid being interpreted as the restatement of one or the other side’s epistemological preferences.

However, there is a way in which this account of metaphor and Kant can avoid the dichotomy of realism and anti-realism. This stems from the fact that, in one very important respect, it is wrong to classify Kant as an anti-realist. He is traditionally identified as such on the grounds that he has categories in the mind determine the ontological structure of reality. The thesis that categories located in our understanding organize the world for us is taken by anti-realists to mean that ‘we cut up the world into objects’ when we introduce one or another conceptual scheme or, as Devitt recounts it (as part of his critique of anti-realism), ‘the cook imposes cookie cutters (concepts) on the dough in order to create cookies (appearances)” (1997: 73). But we have the wrong image in mind if we see concepts determining intuition as stencils pressing shapes into an utterly submissive and pliable dough. This image does not do justice to the conclusion of the transcendental deduction, which states that the conditions of possibility of subjectivity are, at one and the same time, the conditions of possibility of
objectivity. In other words (as we have already seen in Merleau-Ponty’s phenomenological development of Kant), the categories I need to make my experience intelligible are also those which I find apply to the bits and pieces of the world. One consequence of this argument is that ‘subjectivity’ no longer denotes the subject and the subject alone, and ‘objectivity’ no longer denotes the world and the world on its own, for the former term now extends to embrace the conditions of possibility of objectivity, and the latter term extends to embrace the conditions of possibility of subjectivity.

A similar claim is made for Kant by McDowell (1994). In *Mind and World*, McDowell warns us that the realism–anti-realism debate is in ‘danger of falling into interminable oscillation’ between the concepts of a mind-determined reality and a mind-independent reality (1994: 9). He aims to jump off the see-saw and delineate an intermediate standpoint which accommodates the mind-dependence of the anti-realist and the mind-independence of the realist. His position is based upon a ‘naturalized’ reading of Kant’s epistemology, ‘naturalized’ in that human cognitive faculties are acknowledged as belonging to the nature they access. This gives the utmost epistemological and ontological weight to the mutual dependence between mind and world expressed in Kant’s dictum, ‘thoughts without content are empty, [and] intuitions without concepts are blind’ (Kant 1929: A51, B75). Because of the inextricable tie between mind and world, McDowell argues, we are in error if we frame epistemological debate in terms which start from the assumption that one is isolated from and exclusive of the other. Once epistemology is moved away from questions of how two components, conceived as distinct, can intersect, the oscillations between realism and anti-realism cease. Kant’s epistemology can help us in this, McDowell thinks, because it is able to meet the dual requirement of receiving a world through intuition (to satisfy the realist), yet this intuition is located within a rational framework structured by the understanding (to accommodate the anti-realist). Thus, Kant’s transcendental interweaving of subjectivity and objectivity is distinct from the ‘cookie-cutter’ anti-realism with which he is often associated. What is more, on this reading of Kant, he would in actual fact stand alongside the realist in criticizing the ‘imposing’ or ‘cutting’ metaphors of anti-realism
for making reality too much a ‘product’ of mind. As Kant makes it clear, objectivity in his transcendental idealism is not conferred ‘by means of the will’ (1929: A92, B125).

Thus, attributing the realism–anti-realism aporia to the metaphors at work within epistemology, and giving a Kantian explanation for why epistemology operates in this way, do not amount to reassertions of anti-realism. Rather, what these steps show is that picturing or envisioning is intrinsic to the configuration of the subject-object relation in epistemology, where the associations introduced by the image are decisive in shaping our understanding of how subject and object interact. As I have argued, existing epistemological metaphors within the science wars require us to assign priority either to the ‘world’ and ‘the joints’ of the object (with GME and the realist), or the ‘world’ and ‘the joints’ of the subject (with SSK and the anti-realist). The themes of both metaphors are ultimately spatial in origin: reality is conceived as a realm containing objects, and the human subject, while not exactly represented as a place, is nevertheless conceived as a domain to which claims, concepts and possibly objects can belong. The oscillation between realism and anti-realism is created because the ‘domain’ metaphor only entertains the binary alternatives of inside or outside.

PROBLEMS WITH VISUALIZING THE SUBJECT–OBJECT DISTINCTION

These concerns over the subject–object distinction are not new. They are often encountered in terms of the contest between the correspondence and the coherence theories of truth, a contest that is not altogether removed from my interest here in Kant, especially given Walker’s presentation of Kant as a coherence theorist (1989: 61-82, 102-21). Truth, for the correspondence theorist, is understood as a form of correspondence relation between proposition and reality: \( p \) is true if it is the case that \( p \). On this account, the truth content of statement \( p \), uttered by a subject, is established by the way objects are in the world. This arrangement, however, creates the problem of having to explain how entities of one type, concepts or propositions, can be seen to ‘correspond’ with entities of an altogether different type, namely, material objects in the world. The main objection to the notion of correspondence, raised by defenders of the
opposing, coherence theory of truth, is that no account can be given of what this relation of correspondence consists in (Walker 1989: 21). Any attempt to spell out further the conditions which might determine how a particular arrangement of words can correspond to a set of objects will have one of two unsatisfactory outcomes: either it will be working within the categories of word and object and so will be leaving the gap between them unaddressed, or it will try to explain ‘correspondence’ in terms of a comparable metaphor, one which is in equal need of explanation.\(^5\)

The coherence theory of truth seeks to avoid the problems attached to correspondence, but the way it does so is rendered highly problematic by the subject–object opposition. Whereas correspondence theory emphasizes correspondence with the world, coherence theory gives priority to the notion that knowledge necessarily occurs within the subject. Testing a knowledge-claim involves not a check between proposition and a mind-independent reality but between one proposition and another or one perception and another. This still involves contact with the world, except it is the world as it is perceived and reported by other individuals. Thus, the problem of correspondence is avoided because coherentism is working with only one kind of being – cognitions or propositions and the relations which hold between them – rather than two. But this is also the basis for the main objection to coherentism, levelled by correspondence theorists: namely, that it loses contact with mind-independent reality or (echoing the charges made against anti-realism above) that it reduces reality to a series of subjective reports. As Pollock writes in his critique of coherentism:

The basic difficulty with [the coherence theory] is that it cuts justification off from the world. A person could be justified in believing anything. All that would be required would be a sufficiently outlandish but coherent set of beliefs… [While these beliefs may cohere with one another, they] are nowhere tied down in any way to the evidence of [the] senses.

(Quoted in Walker 1989: 176-77; emphases added)

Furthermore, to quote one of the most popular metaphors used against coherentism, critics (in this case, Blackburn) assert that propositions, on the coherentist view, are left
‘free-floating’, i.e. out of touch with reality, because propositions are held only to cohere with each other and not to correspond to the world in itself. ‘It is no good’, Blackburn writes, ‘trying to anchor one free-floating term by attaching it to another equally free-floating term’ (quoted in Alcoff 1996: 185).

The difficulties involved in trying to rethink the subject–object distinction should not be underestimated, as Putnam is all too aware. He argues that the subject–object distinction needs reconceptualizing (1981: ix-xii), and offers internal realism as his contribution to the process (1981: 49-74). Internal realism denies that ‘there are any [experiential] inputs which are not themselves to some extent shaped by our concepts, by the vocabulary we use to report and describe them’, and denies also that there are ‘any inputs which admit of only one description’ (1981: 54). Truth, for the internal realist, resides in ‘some sort of ideal coherence of our beliefs with each other and with our experiences as those experiences are themselves represented in our belief system and not [in] correspondence with mind-independent or discourse-independent “states of affairs”’ (1981: 50). However, Putnam’s position is dismissed by many as a mere restatement of epistemological subjectivism. For example, internal realism is judged by Devitt to be synonymous with anti-realism. Devitt finds anti-realist sentiment in the following expressions of internal realism by Putnam:

> everything we say about an object is of the form: it is such as to affect us in such-and-such a way. Nothing at all we say about any object describes the object as it is ‘in itself’, independently of its effect on us.

(Devitt 1997: 252, quoted from Putnam 1981: 61)

I… advance a view in which the mind does not simply ‘copy’ a world which admits of description by One True Theory. But my view is not a view in which the mind makes up the world, either (or makes it up subject to constraints imposed by ‘methodological canons’ and mind-independent ‘sense-data’). If one must use metaphorical language, then let the metaphor be this: the mind and the world jointly make up the mind and the world. (Or, to make the metaphor even more Hegelian, the Universe makes up the
For Devitt, Putnam’s incorporation of the subject in the construction of the world and knowledge about the world can mean only one thing: knowledge and the world are taken to fall wholly within the realm of the subject (where subjectivity is understood to stand in opposition to objectivity), and therefore to suffer from the subjective attributes of whimsy, unreliability, caprice, in fact, all the qualities that a stable, continuous, determinate mind-independent world does not exhibit. Similarly, Alston, while not applying the term ‘anti-realism’ to Putnam, nevertheless accuses him of making reality subjectively internal (1996). As Alston makes the point:

if the aim of thought is to satisfy its own internal standards, rather than conform itself to the character of something other than thought it is about, then we can't suppose that what determines whether our beliefs are true or false is the character of what they are about.

(Alston 1996: 186)

Thought either satisfies its own internal standards or is about something other than thought; knowledge is either ‘in contact with’ the world or ‘floats above it’, merely cohering with itself. It is one or the other.

But if it is the case that metaphor is intrinsic to the configuration of the subject–object relation in epistemology, then it certainly does not follow that we have to be confined to metaphors which commit us to the oscillation between realism and anti-realism. What is needed, I suggest, is another epistemological metaphor or family of metaphors which can articulate the relation between subject and object in a way which does not repeat the internal–external dichotomy. This would be a metaphor whose subject matter is organized in such a way that both sides’ commitments – the subjective predetermination of experience with anti-realism, and the realist’s idea that knowledge is a representation of how things are in the world beyond subjectivity – can be
accommodated in a non-polar fashion. Looking for a new metaphor to meet this end is not simply casting around for a novel or alternative image for the sake of it, but an act which acknowledges the metaphorical nature of epistemology and the possibility of there being a metaphor which can provide a much-needed revision of epistemology. Such a metaphor, I think, exists, and I shall set out its philosophical origin and epistemological efficacy in the next chapter.

NOTES

1 I have adapted this from Hilary Rose’s ‘glass mirror ideology’ (Rose 1996: 73).

2 This refers to Frege’s (1952) distinction between sense (Sinn) and reference (Bedeutung). The reference of a word is the object it denotes, whereas the sense of a word is the identity or associations which the word has in the context of utterance. To use Frege’s example, the terms ‘Morning Star’, ‘Evening Star’ and ‘Venus’ all refer to the same object, i.e., they have the same reference, but their senses are subtly different.

3 The theory of the Forms, as it appears in Plato’s Republic (1987), asserts that, for every kind of thing, there is a true, original, essential Form or template, and just as a certain kind of object is ‘true’ to a certain kind of conduct, for example, using a pruning knife rather than a chisel to cut a vine, so individuals should live in accordance with their essence in order to lead a just life (1987: 353a). However, artists and poets do not conform to this life of propriety, Plato argues, as their crafts require them to represent a diversity of phenomena and, therefore, to create visual and verbal juxtapositions which ultimately work against the promotion of essential uniformity. In the context of seventeenth-century empiricism, Locke’s concern (1997) is that, when deciding upon which properties are intrinsic to a species or ‘nominal essence’, we only group ideas together whose combination offers some purchase on the hidden boundaries in nature. Metaphor, as the bringing-together of two incompatible terms, Locke argues, is therefore to be avoided. I set out Locke’s position on metaphor in chapter 3.
The claim that the interwoven nature of subjectivity and objectivity, as an epistemological standpoint, is distinct from anti-realism has been made by Sacks (1989), although without specific reference to Kant or the science wars. Sacks’s concern is the impasse between realism and anti-realism, and his claim is that, while the two sides are normally in dispute over the perception-dependence or perception-independence of the world, the main point which needs to be grasped is that it is incoherent to talk about a world independently of the ‘form of perception’, that is, independently of the minimal conditions of perception which make reference to a world possible at all. This is essentially a restatement of the thesis, common to Berkeley and Kant, that any concept or thought of an object or a world ‘out there’ already includes as a part of itself the minimal grounds of subjective awareness necessary for that concept or thought to take place.

These outcomes are reached respectively by the two best-known proponents of the correspondence theory of truth: J.L. Austin, who attempts to explain correspondence in terms of the semantic conventions that relate a statement to the world it purports to describe (1979: 117-33), and Wittgenstein who argues, in the *Tractatus*, that propositions exist in a ‘picturing’ relation with the world, but where the picturing relation itself is something about which we cannot speak (1922).