Beyond dualism – the social construction of nature and the natural *and* social construction of human beings

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Abstract: The dualism between society and nature and the processes by which nature is being socially constructed has become an area of increasing concern and interest to geographers in recent years. In this article, the abstract and concrete inter-relationships between nature and society will be problematized, drawing on the work of Lackoff, Wittgenstein, Harré, Bourdieu and Lefebvre, among others. A number of concepts that will enable us to work across the boundaries conceived to exist between the physical, the mental and the social and thus of great importance for the analysis of the social construction of nature will be proposed.

I Introduction

The question of how to dissolve the dualism between nature[1] and society (or culture) – and the various other dualisms deeply ingrained in our 'enlightened' thinking (e.g., mind/matter, reason/emotion, etc.) – has received increasing attention from human geographers working in various strands of the discipline in recent years; for examples in historical geography, see Williams (1994), and for cultural geography, see Demeritt (1994b). Geographers grappling with the question from a Marxist point of view include, among others, Fitzsimmons (1989), Castree (1995) and Harvey (1993; in Harvey and Haraway, 1995). The question is not new (see, for example, Glacken 1970); what is surprising is not that it should be addressed by such a diverse group of human geographers, but rather that, in spite of their differences in approach, quite a few of them seem to agree on the solution to the problem: that we need a new language, that we need new metaphors and categories!

Thus in a recent debate between Harvey and Haraway, we find Harvey saying '... it's terribly important to overcome these divides ... and it's terribly hard to find a language to do so' (Harvey and Haraway, 1995: 515). That Haraway's metaphor of 'cyborg'

(a '. . . hybrid of machine and organism, a creature of social reality as well as a creature of fiction' (Haraway, 1991: 149)) might provide a solution has been argued by Demeritt, who compared it to 'corrective lenses for the dizzy double vision produced by the nature/culture dualism' (Demeritt, 1994b: 163).[2] Cosgrove (1990: 344), meanwhile, asserts that '. . . metaphor and image are conceived not as surface representations of a deeper truth but as creative intervention in making the truth', and in humanist geography the power of language and metaphor in the creation of reality has been stressed repeatedly (Tuan, 1991; Buttimer, 1993). Demeritt (1994b: 163) proposes that the only way a dialogue can be opened up between cultural geographers and environmental historians is by finding a new, common language, for '. . . quite literally, they speak different languages and use incommensurable metaphors'. Cultural geographers are seen to ignore nature as an autonomous actor by viewing it as a social construct alone (thus representing society), while environmental historians are seen to assign agency to nature, ignoring that it is a social construct also (thus representing nature) (Demeritt, 1994b). The same problem could also be said to exist between physical and human geographers. This focus on language illustrates nicely that the 'linguistic turn' has taken a firm hold in human geography.

While agreeing that language, metaphors and categories are of great importance for the social construction of nature, I would argue that the relationship between them and nature, as well as the practices changing that nature, have not been explored adequately. The links and divisions between the abstract and the concrete, and between theory and practice, must be investigated in order to discover whether the differences between environmental historians and cultural geographers are due to an uncommon language and metaphors, or to some other reason. Furthermore, as Cosgrove's quotation (above) implies, discourse is concerned with 'truth-making', and debates about words and categories are always moral endeavours in that they attempt to bring about a certain vision of the world. Therefore, the purpose of sections II–V is, in Lefebvre's (1991: 413) words, '. . . to reconnect elements that have been separated and to replace confusion by clear distinction; to rejoin the severed and reanalyse the comingled'.

To do so I shall make use of the three-fold division *physical, mental, social* that recurs time and again in philosophy, and recently also in geography (Werlen, 1993). This triad also underlies the disciplinary boundaries between physical behavioural and cultural/social geography. In Popper and Eccles' (1977) work it takes the form of World 1 (physical objects), World 2 (mental world of subjective experience) and World 3 (products of the human mind – a social endeavour). Lefebvre (1991: 11–12), in his search for a theory of the social production of space, which is of great relevance for theorizing the social construction of nature (see section VI), stresses that such a theory must be able to account for the unity between the fields of

> . . . first, the *physical* – nature, the Cosmos; secondly, the *mental*, including logical and formal abstractions; and, thirdly, the *social*. In other words, we are concerned with logico-epistemological space, the space of social practice, the space occupied by sensory phenomena, including products of the imagination . . .

Recently, the geographer Werlen (1993) has tried to merge Popper and Eccles' three Worlds with Schutz's (1982) views of the lifeworld. This undertaking led him to conclude that the only way to overcome the subjective/objective divide, i.e., dualism, is by focusing on action in geography rather than space.

This triad will be used in sections II–IV to show that the physical, the mental and the social are, in fact, inseparably linked by a web of complex processes. This will be

exemplified in section V. In section VI, the social construction of social reality will be investigated, drawing particularly on the work of Bourdieu. In section VII, some of the concepts necessary for the analysis of the social construction of nature are pointed out. Whereas the phrase the 'social construction of nature' has been used by geographers as diverse as Harvey (1993), Harrison and Burgess (1994) and Olwig (1996), the notions of time and space employed in the analysis of that process (if employed at all) have tended to focus on the 'social construction' element rather than the 'nature' element. In order to redress the balance, a notion of time-space as used by Lefebvre will be introduced in that section. It is hoped that when reaching the conclusions (section VIII), it will have become apparent that to analyse 'the social construction of *nature*', we need to overcome dualism not by a language/category change alone, but also by investigating the complex processes at work when the physical, the mental and the social interact.

II The physical

1   The body, the brain and the environment

Human beings are natural constructs. The body, the brain and the environment have evolved together over millions of years. Evolution here refers to all the complex processes by which bodies, brains (and embodied minds) as well as environments come about and change in interaction with each-other. When trying to account for evolution, it is important not to declare one particular development in the process as a determining or causal factor. As Moscovici (1976: 28) has pointed out, developments are simultaneous and, in the case of humans, to prioritize speech, bipedalism or the use of tools over other developments amounts to saying that if '. . . on the basis of a single feature, it were possible to define man at a given point in space and time, then he [*sic*] would be defined everywhere and for all time'. The body, before being made an object of knowledge, before being appropriated by thought, is the centre of experience, the centre of action. It is a material reality in that cells receive information in material form, in that it is born, ages and dies. It is subject to the forces of time, and being a space, it expresses time. 'Time and space are not separable within a texture so conceived; *space implies time, and vice versa*' (Lefebvre, 1991: 118, emphasis added).

The body and the brain are intrinsically linked. In his evolutionary theory of the mind Edelman (1992) points out that what is special about the brain is not the physical matter underlying it (carbon, hydrogen, oxygen, etc.), but the way it is organized due to processes of selection. Edelman distinguishes between two types of selection: developmental and experiential. The former takes place primarily before birth and refers to the genetic instructions for neural development present in every organism. Such instructions, however, do not specify the particular location of every nerve cell, and cells compete for their location. Thus, in every brain unique patterns of neurons and neuronal groups are established (for example, the cerebral cortex is responsible for higher brain functions such as speech, thought, etc.). Experiential selection, on the other hand, takes place after birth, and refers to the fact that a new-born animal shows selective attention and preferences in its new environment from the start. Every nerve cell in the brain is connected to other nerve cells at sites called synapses, which is where information between the various regions of the brain is exchanged. It is estimated that in the cortical sheet alone there are over a million billion such connections (Edelman, 1992: 17). Not only is the brain connected to the outside world by neurons (receiving information from all the senses) but

it also 'communicates' to internal parts of the body (e.g., muscles and glands), and the brain via other neurons.

2   The bodily basis of metaphors and categories

The stress in this section is on the bodily basis of metaphor, something which has been pointed out by Buttimer (1993: 78) when stating that metaphors have the capacity to '... capture the full range of sensory and emotional aspects of people's experience in the world'. Buttimer (1993) argues that *metaphors* enable us to go beyond the mentally mapped ('seen') and cognitively schematized views of the world to include feelings of love, hate, hope, etc. She states that 'a treasure of insight can indeed be unlocked via metaphorical rather than literal or rational thinking' (1993: 78). The reason/emotion distinction is noteworthy here and will be investigated later on.

One of the most radical concepts to be introduced in recent years in the area of cognitive science is that of *conceptual metaphor*. The belief that concepts are disembodied abstractions has been challenged by various studies (Johnson, 1987; Lackoff, 1987; 1994; Turner, 1987; 1994), and it has been claimed that abstract notions such as time, event, cause, etc., are metaphorical. Metaphor here is not used in the conventional sense – i.e., as a function of language – but in terms of physical experience and thought. As Lackoff (1994: 43) points out, in contemporary metaphor research, metaphor has come to mean 'cross-domain mapping in the conceptual system', in other words, links established across different conceptual domains. He goes on: '... as soon as one gets away from concrete physical experience and starts talking about abstractions or emotions, metaphorical understanding is the norm' (1994: 44). This has already been observed by Olsson in 1979, who claimed that 'all meaning is at bottom metaphoric' (1979: 303).

One example of how understanding of one domain of experience in terms of another takes place is the metaphor 'love as a journey'. Conceptual metaphors such as 'our relationship has hit a *dead-end street*', they can't *keep going the way they have*', 'we are at a *crossroads*', all map one experience, a love-relationship, in terms of another, a journey. As Lackoff (1994) has shown, the lovers here correspond to travellers, the relationship to the vehicle and the couple's common goals to the destination. The difficulties the relationship might face correspond to the impediments one might encounter when travelling.

Some types of metaphors identified by Lackoff and Johnson (1980) in an earlier study were first, *structural* metaphors (metaphors relating to new practices that structure our life in fundamental ways, e.g., 'time is money'). Secondly, *orientational* metaphors (metaphors organizing not only one concept in terms of another but also a whole system of concepts in terms of another). Often spatially orientated, they contain words like up/down, in/out, front/back, etc, which is due to the way our bodies function in space (1980: 14). Thirdly, there are *ontological* metaphors which are metaphors closely related to our experience of physical objects and substances. They might refer to entities and substances (e.g., the 'mind as machine') and are always intentional, requiring the drawing of an artificial boundary around a physical phenomenon the complexity of which we might otherwise be unable to grasp.

The most important points made by Lackoff (1994: 84–85) for our purposes are that metaphors are fundamentally conceptual, not linguistic, in nature; that they are the main mechanism through which abstract concepts are understood and abstract reasoning is performed; that metaphorical understanding is grounded in *nonmetaphorical* understanding; that the mappings undertaken when constructing metaphors are *grounded in the*

body and in everyday experience and knowledge; and that conventional conceptual metaphors are mostly unconscious, automatic and require no real effort of comprehension.

One point to bear in mind when thinking about the nature/society dualism made by Lackoff in his study of *categories* is that the world is understood not only in terms of individual things but also in terms of categories of things to which we tend to attribute a '*real existence*' (Lackoff, 1987: 9). This, I believe, is what is at the core of the 'problem' identified by Demeritt (1994b), which he attributes to a failure in communication. Environmental historians (or physical geographers) and cultural geographers might not only be speaking different languages and use incommensurable metaphors but are also very likely talking about different 'things' altogether; the former about real entities assigned to the category 'nature' (e.g. trees, rivers, etc.), the latter about categories taken as real (e.g., societies, landscapes (as texts), etc.). They are different but inter-related in subtle ways. The dualism we are trying to overcome, as Harvey (in Harvey and Haraway, 1995) has pointed out, is one of categories. The present debates are attempts to realign the boundaries of the category of 'nature'. After Descartes, the 'mind' was deducted, now 'cyborgs' might be added! It is, therefore, central to our understanding of our relationship with what we call nature that we understand how we perceptually categorize real objects in the world, as well as the implications such categories have.

The classical theory of categorization, dating back to Plato, argued that the allocation of a thing to a category depends on singly necessary and jointly sufficient conditions. A large number of studies has shown, however, that this is not the way people actually categorize (examples are a Chinese encyclopaedia including 'fabulous animals' in a category of real ones, or a Dyirbal category including 'women, fire and dangerous things' – see Lackoff, 1987).

One of the earliest critics of classical categories was Wittgenstein who, in his later writings, introduced the notion of 'family resemblance'. In his investigation of the category 'games', Wittgenstein found that it is not necessarily common properties that define games (what, for example, are the common properties of chess and hide-and-seek?), but various similarities not shared by all (Wittenstein, 1958: 32e). This notion of family resemblances has formed the basis of Rosch's prototype theory, one of the most thorough, alternative theories of categorization to that of classical categories. A prototype, according to Rosch, is the most representative member of a category. For example, concerning birds in British society, a robin would be seen as a prototype (something that springs to mind when trying to think of a bird) while an ostrich, although no lesser member of the bird family, would be likely to be ignored (see Lackoff, 1987: 41). According to Wittgenstein, what makes it possible for different activities to belong to the same category is the *structure* of the semantic field and our structured understanding of them.

This was also observed by Foucault (1970: 139) who argued that the process of naming does not depend upon what one sees, 'but upon elements that have already been introduced into discourse by structure'. For him taxonomies and classifications were a matter of constructing a secondary language upon a primary, universal language. This universal language expresses the dominant view of the world. This is not to say that alternative views of the world do not exist (they always have, as Cosgrove, 1990, and Matless, 1991; 1992a, have shown), but because of their subordination under the dominant worldview, they do not have the structuring influences on the world which the dominant view has (e.g., Cartesianism).

Thought, though, is also embodied, and the structures used to construct our conceptual system grow out of our bodily experience (Lackoff, 1987: xv). Categorization is a matter

of both human experience and imagination, 'of perception, motor activity, and culture on the one hand, and of metaphor, metonymy and mental imagery on the other' (1987: 8). Once learnt, most categorization takes place unconsciously. One of Foucault's aims when studying '*The order of things*' (1970) was to '... reveal a *positive unconscious* of knowledge: a level that *eludes consciousness* of the scientist and yet is part of scientific discourse ...' (Foucault, 1970: xi). In his opinion, to assign something either to a category or not limits the way we can think about it. Thus, our inability to comprehend 'fabulous animals' among real ones is due to our system of thought; the 'stark impossibility of thinking *that*' (1970: xv). What made it possible for 'women', 'fire' and 'dangerous things' to end up in the same category was the structure of thought of the particular society that did the categorizing. Thus, the Dyirbal women are related to the sun via myth, and the experience of the sun is related to fire (burning) which can be dangerous (Lackoff, 1987: 100). Our own (western) thoughts when linking these terms might be quite different.

III   The mental

1   An alternative view of the mind

Body, brain and environment – tangible enough. But what about the mind? What about what Ryle (1949) called the 'ghost in the machine'? Since 1641, when Descartes introduced what became known as Cartesian dualism, the view that the mind and the body are distinct substances, each of which exists independent of the other, has become very widespread. When developing his method of doubt, Descartes ended up with one of the most famous philosophical dicta ever: '*Cogito ergo sum*; 'I think, therefore I am.' Thought, for Descartes, could not exist except as an essentially thinking thing or substance. Thus *res cogitans* (thinking things) exist outside time and space, lack location and are unobservable to outside investigators, while the body, *res extensa* (extended things) is measurable and can be investigated and experimented upon (Guttenplan, 1994). This view had far-reaching consequences, especially in relation to the conduct of a science sanctioned by the moral and ethical views made possible by this dualism. A machine view of the body is, however, as inadequate as a ghost view of the mind.

2   Consciousness: the discursive mind

A central phenomenon when investigating the mind is consciousness. Edelman (1992), in his biological theory of the mind and consciousness, distinguishes between two levels of consciousness: primary consciousness and higher order consciousness. Primary consciousness is a state of being mentally aware of things without, however, any sense of a self with a past and a future (1992: 17). Via a set of re-entrant processes an animal possessing primary consciousness is able to correlate into a 'scene' different kinds of categorizations in response to contemporaneous events in the world. It is a form of remembered present. An 'image' arises when primary consciousness (where primary categorization concerned with signals from the outside world takes place) links up with conceptual categorization taking place within the brain and requiring perceptual categorization and memory. It can be regenerated, in part, by memory, but not in reference to symbolic memory, which is the memory for symbols and their meaning and is linked to higher-order consciousness. This second level of consciousness – higher-order consciousness – '... involves the

ability to construct a socially based selfhood, to model the world in terms of the past and the future …' (Edelman, 1992: 125). It is a form of direct awareness, so that we are conscious of the fact that we are conscious. It also, very importantly, requires the continued operation of primary consciousness to which survival instincts are assigned. According to Edelman, the evolution of symbolic memory was vital for the evolution of language, which in turn was required for the construction of socially based selfhood.

Language is viewed by Edelman (1992) as an interactional achievement, and he argues that infants already have conceptual categories which do not originate by semantic means or criteria. In order for syntax to arise, the brain must already possess re-entrant structures that enable semantics to arise prior to syntax, by relating phonological symbols to concepts. The same has also been argued by Moscovici (1976). A vital implication, from a geographical point of view, is that as syntax is built up and a sufficiently large lexicon is learnt, the conceptual centres of the brain treat

> … the symbols and their references and the imagery they evoke as an *'independent' world to be further categorized*. A conceptual explosion and ontological revolution – a world, not just an environment – are made possible by the interaction between conceptual and language centres (Moscovici, 1993: 150, emphasis added).

In consequence, as linguistic and semantic capabilities arise in society and 'sentences involving *metaphor* are linked to thought, the capability to create new models of the world grows at an explosive rate' (1993: 170, emphasis added). As Olsson (1979: 303) has observed, without metaphor we could never 'produce new worlds from old worlds'. Therefore, in order to become conscious of being conscious a 'system of memory must be related to a conceptual representation of a true self (or social self) acting on an environment and vice versa' (Edelman, 1992: 131). It is with the emergence of language in a speech community that an inner life becomes possible, and it is higher-order consciousness that 'adds socially constructed selfhood to this picture of biological individuality' (Moscovici, 1993: 133).

Language is, of course, central to the *discursive view of the mind* which has its roots in discursive psychology. This branch of psychology is based on the work of Wittgenstein (especially his concept of 'language-game') as well as G.H. Mead and L. Vygotsky (Harré and Gillett, 1994). Mental activity here is seen to take place against a background of human activity, governed by informal rules. These rules are part of the context in which a human being is situated, a context suffused with culture, politics, history, etc. Thus, to understand the mind of a person at a particular point in time one must know not only his or her situation but also what the situation means to that particular individual with his or her particular history, upbringing, etc. The mind is a social construct in that concepts that arise from discourse shape the way we think. As Harré and Gillett (1994: 24) state: '… the way in which we conceptualize the mind (or anything else) is a product of the concepts available within our discourse'. More importantly, 'the rules governing the use of signs (concept use) permeate and structure the intentional or mental lives of human beings' (1994: 20). Concepts, categorizations and classifications play a vital role in how we perceive, think about and act upon the world. They shape our minds as we shape them. This concept of the mind is somewhat similar to Bourdieu's *habitus* to be introduced later on; *habitus* is a more useful notion of what a 'mind' might be, as the importance of the body, the environment, as well as socioeconomic factors are stressed in its formation.

IV   The social

1   From natural construct to social construct

It is through interaction that individuals are socially constructed, and thus a fundamental requirement of 'self'-consciousness is the presence of an 'other'. What is unique about the body among the physical things of the world is that, as social constructs, they sustain persons. This has been pointed out by Harré (1991: 11, emphasis added) who observed that

> People are aware of themselves as embodied, and they manage their lives as embodied beings within diverse frameworks of historically modulating moral and aesthetic evaluations. *Bodies are identified as this or that embodied person.*

As the seat of personhood, Harré argues, the body is at the nexus of a complex web of social obligations and interpersonal meanings. For example, the process by which a person is separated from his or her body is a social process, requiring a transfer of responsibilities and a suspension of rights. This is the case, for example, in a medical context, where a patient hands over the responsibility and right of and over his or her body to a doctor. The body can then be looked at and investigated by the doctor as would not be the case if he or she were not a doctor (e.g., embarrassment is suspended, the attitude is one of acceptance and submission to the orders and actions of the doctor).

The body and the self it embodies also plays a central role in the theory of Bourdieu. The relation to the body is a fundamental dimension of the *habitus* (see section VI). The body enacting this socially constructed self (the ethical codes, moral obligations, attitudes, beliefs, in short the history of a society as expressed at a particular point in time) is, according to Bourdieu (1990a: 72), a 'learned body'. The self, to a great extent, is the mirror image (or mirage) one has of oneself in relation to others. The life-long process of becoming a self is a complex one of moving back and forth between subjective experience and objective encounter, between what one sees oneself to be, what one thinks others perceive one to be, and what one conceives one would wish to be. As the seat of personhood, the body/self, is at the nexus of power relationships. As Foucault's work (1977; 1980) has illustrated, there has been a shift in the conduct of punishment from bodily mutilation to the reform of the 'self' within that body via other means (e.g., prisons). His work has been of great importance concerning the ways perceptions of the 'self' have changed over time, and the implications this has had in practice.[3]

2   Reason, emotion and beyond

The neuroscientist Damasio has claimed that reason and emotion are related as well as physically based. Extensive research by Damasio on frontal lobe damage of the brain has shown that such damage does not impair the intelligence of a person affected but leads to a complete loss of emotion and knowledge of social conventions. Such people would, for example, no longer be able to judge which 'friends' and ventures were good or bad for them. They would no longer act in accordance with social and moral conventions, and in most cases would, literally, ruin themselves. They would not show emotions in situations of danger or when shown pictures of catastrophes. All emotional knowledge, and what might, in Bourdieu's words, be called 'the feel for the game', would have gone. This led Damasio to conclude that emotion plays a far greater role in reasoning than has hitherto been acknowledged (Damasio, 1994), thus problematizing the well-known dualism

between reason and emotion.[4] The region of the brain – the frontal lobe – responsible for feelings and emotions, is the one Edelman thinks is responsible for primary consciousness and concerned with a being's survival instincts. It is a region which receives inputs from virtually every bodily organ. This link to instinct might account for its link to the 'feel for the game' as 'emotion, feeling and biological regulation all play a role in human reason' (Damasio, 1994: xiii).

While Damasio's research shows that the reason/emotion dualism does not hold but that they are inter-related in complex ways, it does not explain how emotions come about. A number of recent studies of emotions have shown that many emotion words like love, anger, hate, etc., while backed up by a bodily agitation (turning red, sweating, etc.) do not stand for that agitation (turning red can take place under various circumstances, as can sweating, etc.). Emotions, it has been found, are intentional (as is consciousness), they are always directed at something (in love *with*, angry *about*) and, most importantly, they are socially constructed. That does not mean that they are not bodily experienced, but how they are experienced often depends on the local moral and social order and their situatedness in time and space. The body, the brain and the mind are linked in complex ways; how else, if not with our bodies, would we display our emotions? Yet how we feel if someone lets us down or acts like a hero depends on the norms and rules of a certain culture at a certain time as well as the workings of the brain and the body. There must first exist a definition of what counts as a 'let down' or 'heroic behaviour' in a culture before these emotions can be experienced (see Harré, 1986). As Merleau-Ponty (1962/1994: 189) pointed out: 'It is no more natural, and no less conventional, to shout in anger or to kiss in love than to call a table "a table". Feelings and passional conduct are invented like words.'

As a moralizing discourse, the reason/emotion dualism has had far-reaching consequences. It is when crossconceptually mapped (mostly unconsciously) with other prominent dualisms of western discourse – object/subject, strong/weak, society/nature – that it gains its power; thus in our culture, men have generally been associated with the former terms, women with the latter, with varied consequences for both sexes and the world we live in. In summary, the physical, the mental and the social are inextricably linked.

V Blindness – how the loss of a sense alters perceptions of space and time

One way for geographers to investigate the complex inter-relationship between the physical/mental/social is by looking at the experience of being-in-the-world of people with disabilities. In spite of increasing attempts in geography to include marginalized voices such as those of women and ethnic minority groups, there is still a large group of 'invisible', unheard people in 'society': namely, the disabled (see Golledge, 1993). Listening to the voices of people whose experience of being-in-the world is radically different from our own, due not to cultural differences but bodily make-up, is vital if we are interested in how experiences of space, time and nature (as well as society) differ.

Hull, in the account of his experience of going totally blind in middle-age, notes that how, as time passes, his experience of time and space changes. This is due to the fact that other senses, such as hearing and touch, now develop to replace the sight that has been lost. He becomes aware of how sounds start to make up his world, how, for example, the wind '. . . creates trees, one is surrounded by trees, whereas before there was nothing' (1991: 12). Or, the rain brings out the contours of everything, creating continuity in an

otherwise fragmented world. He therefore wishes rain could fall inside a room '... to give a sense of being in the room, instead of just sitting on a chair' (1991: 23). To him the perceived world seems stable and continuous, while the acoustic world is always changing (once a sound stops, there is silence). Thus 'the world of the blind is more ephemeral, since sounds come and go' (1991: 71). What is interesting here is that his account of the acoustic world closely resembles the descriptions of the experience of a postmodern world – which consist, of course, of the air left over from the process of modernity, as when '... all that is solid melts into air' (Marx and Engels, 1988: 37). However, the experience of time-space compression for Hull (1991: 61) reverses: '... the disabled person ... finds that space is contracted and time is expanded.' Thus, there might be reasons for this feeling of ephemerality other than can be experienced in blindness – such as our increasing involvement with the conceptual worlds of computers and virtual realities where, for example, we can surf on the World Wide Web to all sorts of exotic mentalscapes or simulate flight and other experiences.

While the blind live in time, Hull (1991: 71–72) notes, the deaf live in space: 'The deaf measure time by seeing movement', while for the blind, whose 'space is reduced to one's body ... position is measured by time'. It is not only the experience of the external world, however, that changes with blindness, but also that of the body. In the case of Hull (1991: 46), 'this feeling of having become invisible must be related to the loss of the body image ... Being invisible to others I become invisible to myself ... To be seen is to exist', confirming Edelman's point that a 'self' needs an 'other' to come into being. It is striking how Hull's experience of being without a body resembles Descartes' account of the mind. Hull (1991: 48) states: 'There is no sense of extension into space. So I am nothing but pure consciousness ... and could be anywhere', while Descartes (1637: 127), over three hundred years earlier, wrote:

> ... I was a substance whose whole essence or nature is simply to think, and which does not require any place, or depend on any material thing, in order to exist ... the soul by which I am what I am – is entirely distinct from the body ...

It is only through the senses and the body's interaction with the environment that the sense of being is finally regained:

> My body and the rain intermingle, and become one audio-tacticle, three-dimensional universe, within which and throughout the whole of which lies my awareness. This is in sharp contrast to the single-track line of consecutive speech which makes up my thoughts. This line of thought expressed in speech is not extended in space at all (Hull, 1991, 100).

The account of this experience – again echoing Descartes – nicely sums up the paradox that while bodily experience is essential to consciousness, the mind and knowledge, the latter can sometimes seem detached from their bodily basis.

VI   The social construction of social reality

Social constructivism was developed in the 1960s by Berger, a student of Alfred Schutz. Together with Luckmann he investigated how it was possible for subjective meanings to become objective realities, and their findings are summarized below. First, society as objective reality comes about via the *institutionalization of habits*. Institutions, in other words, grow out of customs, and 'always have a history of which they are the products' (Berger and Luckmann, 1971: 82). They point out that the logic of institutions does not reside within them and their external functionalities, but how they are thought about. Put

differently, reflective consciousness superimposes the quality of logic on the institutional order (1971: 82).

Secondly, society as subjective reality is maintained via the relationship between *externalization, objectivation* and *internalization*. Externalization refers to the products of human beings, physical as well as mental ones such as landscapes or organizations. Objectivation refers to the ways these products gain a reality of their own, and internalization refers to the ways these objectivations are again transformed to become part of human consciousness. This last process depends heavily, according to Berger and Luckmann, on the socialization of individuals, especially when young. Institutions seem real as long as they are treated as such. As Lackoff (1987: 208) pointed out, 'trees and rocks may exist independently of the human mind. Governments do not'.

Berger and Luckmann are primarily concerned with social reality, and the physical world is rarely referred to in their work. Of more relevance to geographers interested not only as to how social reality comes about but also in how nature is socially constructed is the work of Pierre Bourdieu. In the remainder of this section I shall thus briefly introduce his main concepts.

1 *Habitus* – a new concept for (an embodied) 'mind'?

Stemming from Latin, *habitus* refers to habitual or typical condition, state or appearance. In Bourdieu's (1990a; 1990b) work, the *habitus* consists of durable, transposable dispositions (which are either the result of an organizing action, a way of being, or tendency, propensity or inclination) and generative classificatory schemes (which are the mental structures through which the social world is comprehended). These dispositions and schemes, as Bourdieu stresses, are embodied. Embodiment in his work takes three meanings. First, the *habitus* is individual (every body/brain is unique); secondly, it originates in practice; and thirdly, the practical taxonomies which are at the core of the generative schemes of the *habitus* are rooted in the body (Jenkins, 1992: 75). The *habitus* embodies an individual's history, being constitutive of an individual's particular social environment (material conditions, class relations, etc.). It is, in Bourdieu's words, 'history turned into nature' (1972: 78). Of great importance here is the link between the *habitus* and practice, an important point to consider when attempting to topple the nature/society dualism; as Lefebvre has also observed, 'the search for a language must … in no circumstances be permitted to become detached from practice …' (1991: 65). It is by focusing on practice, according to Bourdieu, that objectivism can be bypassed, and he finds it necessary '… to return to practice as the locus of the dialectic between *opus operatum* and *modus operandi*, between the objectified and the embodied products of historical action, structures and the *habitus*' (in Wacquant, 1989: 43).

I shall say more about practice in section VII below, but suffice it to say that the *habitus* is acquired through socialization, and it is by means of the *habitus* that we 'have a feel for the game' and know what is possible/impossible in terms of our social standing. 'Action guided by the ''feel for the game'' is not based on reason', argues Bourdieu (1990a: 11), which would confirm Damasio's observations (above) that people with frontal lobe damage are able to reason quite 'normally' about certain situations when contemplating impersonal issues, but are unable to do so when having to act and decide on the spur of a moment. In a post-Cartesian view of the world, the reason/emotion dualism does not hold; the complexity of their inter-relationship, however, is still very inadequately understood.

2   Symbolic power – classifications and categories revisited

The taken-for-granted world comes about when categories and classifications are mistaken for reality *per se*. As Lackoff has pointed out, once learnt 'most categorization is automatic and unconscious, and if we become aware of it at all, it is only in problematic cases' (1987: 6). When they do become problematic, as in the case of 'nature' and 'society', they become the crucial stakes of political struggle, which, as Bourdieu argues, is 'a struggle to impose the legitimate principle of vision and division' (1990a: 134). They become, in other words, the stakes of symbolic power:

> Symbolic power – as power of constituting the given through utterances, of making people see and believe, of confirming or transforming the vision of the world and, thereby, action on the world and thus the world itself … (Bourdieu, 1991: 170).

The outcome of such struggles depends on the various forms of capital held by the actors involved in the struggle. Bourdieu distinguishes between 1) economic capital; 2) cultural/social capital; and 3) symbolic capital 'which is the form that the various species of capital assume when they are perceived and recognized as legitimate' (Bourdieu, 1989: 17), as well as their position in a field. A field (e.g., the economic/artistic/scientific field, etc.) is a network of objective relations between positions objectively defined. Categories and classifications might be concerned with natural kinds (e.g., animals (zoology), plants (botany), stones (geology)), or based on the practical interests of human beings (e.g., social groups or classes, tools, etc.) (Harré, 1991). According to Bourdieu (1991: 222), however, even the most 'natural' classifications are the products of an arbitrary imposition of a 'previous state of the relations of power in the field of struggle over legitimate delimitation'. A central argument of this article has been that at present this 'previous state' is still Cartesianism. The taken-for-grantedness of this worldview has been badly shaken in recent years, and it is in this context that the nature/society debates should be viewed.

VII   The social construction of nature

To account for the social construction of nature, the physical, mental (*habitus*) and social all need to be linked. In the limited space of this article I shall briefly indicate two concepts here that are indispensable in any such attempt.

1   Time-space

Time and space have always played in important role in geographical analysis. Particularly relevant is the notion of time-space to an inquiry into nature as a social construct. The idea of time and space as social constructs has been advanced by Harvey, drawing on Durkheim's ideas on religious life. He states:

> each social formation constructs objective conceptions of space and time sufficient unto its own needs and purposes of material and social reproduction and organize its material practices in accordance with those conceptions (Harvey, 1990: 419, emphasis omitted).

This view is of great relevance in relation to social processes. However, it is insufficient when physical entities – nature – are involved. While the time needed to grow crops or trees, for example, might be manipulated via fertilizers, pesticides and genetic manipulation, it remains true nevertheless that various time limits are imposed on the social

constructions of nature by physical processes. Such time-space requirements of physical/ biological processes support the idea of 'agency in nature'; I would not go as far as Bird (1987: 259), however, who claimed that 'much agricultural research, as in plant breeding, engages nature in an active negotiation'. If 'nature' does 'negotiate' ('discuss, confer, arrange by discussion' – Hornby, 1985: 418), one cannot stop wondering how species extinction, factory farms and the most ruthless exploitation of all life forms by human beings have been possible. There are limitations/possibilities inherent in nature – they have, however, to be considered in relation to the aims/expectations of human practices rather than 'intentions' in nature.

What is of great relevance here is the notion of time-space advanced by Lefebvre (1991: 95, emphasis added):

> Let everyone look at the space around them. What do they see? Do they see time? They live time after all; they are in time. Yet all anyone sees is movement. *In nature, time is apprehended within space* . . .

When analysing the social construction of nature two inter-related notions of space and time thus come into play. First, abstract space and time – space and time as social constructs, as objects of thought, objects manipulated and constructed by thought and practice which, nevertheless, have very real implications – such as timetables, money flows, taxation periods, etc. Secondly, concrete time and space or, better, time-space in the sense defined above. Thus, account must be taken of two *time-space-scales*; that within which the socioeconomic sphere operates, and that within which nature operates.

2   The logic of practice

According to Bourdieu it is an error to present the theoretical view of practice as the practical relation to practice; an error, due to the atemporal gaze of the analyst for whom time disappears and no outcome remains uncertain. When thinking about practice, one must thus remain cautious that

> Practice unfolds in time and it has all the correlative properties, such as *irreversibility*, that synchronization destroys. Its temporal structure, that is, its rhythm, its tempo, and above all its directionality, is constitutive of its meaning . . . *practice is inseparable from temporality*, not only because it is played out in time, but also because it plays strategically with time and especially with tempo (Bourdieu, 1990b: 81, emphasis added).

This immediacy of practice, this 'immersedness' of those who practise in the stream of time, is what prevents them from standing back to reflect on what they do. One of the essential properties of practice is thus *urgency* (Bourdieu, 1990b). 'One only has to step outside the game, as the observer does, in order to sweep away the urgency, the appeals, the threats, the steps to be taken, which make up the *real, really lived-in world*' (1990b: 82). This break between reflective accounts of practice and practical accounts of practice is imminent in a statement like 'if only we had done that, this could have been prevented' (to do 'that' at 'that' time one would, however, have had to be able to foresee what would happen). As Bourdieu points out, practical logic organizes all thoughts, perceptions and actions by means of a number of generative principles which are irregular and incoherent and thus 'capable of generating practices that are both intrinsically coherent and compatible with the objective conditions' (1990b: 86). These generative principles constitute a practically integrated whole, where 'logic can be everywhere only because it is truly present nowhere' (1990b: 87). To grasp this logic, one has to focus not on the practices themselves but on the principles of their production, rooted in the *habitus*; the cognitive and evaluative structures that organize the schemes of perception of the world in accordance with the objective structures of a given state of the social world.

As Lefebvre (1991: 34) has also observed, 'like all social practice, spatial practice is *lived directly before it is conceptualized*; the "unconscious" level of lived experience *per se*'.

VIII   Conclusions

As the analysis of the physical/mental/social has shown, there are no nature/society, mind/matter or reason/emotion dualisms at the level of the concrete. On the other hand, at the level of abstraction, these categories have played a vital role in bringing about the dominant vision of the world, a vision according to which we act. This vision is being negotiated as new 'facts' arise which render it problematic.[5] The dominant mode of production and the practices associated with it are currently based on Cartesian structures of thought. These structures, however, are slowly being eroded. As the new 'facts' discovered by neuroscientists like Damasio and others in the area of reason and emotion begin to be publicized in the national press (see Burne, 1996), scientists start to question their worldviews. Thus, in an article about the recent Edinburgh International Science Festival we find the statement:

> All research had to make distinctions and recognise different kinds of processes and causes, but science often stopped there, *without putting back together what it had separated. False dichotomies* such as heredity versus the environment and *thinking versus feeling* had wrought havoc with scientific analysis, forcing choice between alternatives that were not mutually exclusive (Wojtas, 1996: 7, emphasis added).

What might the implications of these new 'facts' be, will they bring about a better world? Let us recall Lewis' thoughts on moral conventions and beliefs in new 'facts'. There might be people who would argue that proof of moral progress is that witches are no longer burnt as was a common custom a few hundred years ago. Not so, Lewis (1955: 25) argues: '... it may be a great advance in knowledge not to believe in witches: there is no moral advance in not executing them when you do not think they are there.'

What morals might 'cyborgs' bring about, what practices might such a category sanction? Will the erasure of the categorical boundary between 'society' and 'nature' enable an even more ruthless exploitation of nature by crossconceptually mapping such a category to the category 'natural'? There is a danger in claiming that 'we are all "cyborgs"', a danger that lies in the confusion between creation and production (see Lefebvre, 1991). Is a mouse with a human ear implanted on her back for organ transplant purposes (Focus, 1996: 32–33) a creation? Is it natural? I would argue that it is a product, and thus, in that sense, unnatural. What has made such a practice possible? Cartesian dualism, with its moral implications of body = machine, mind = attribute of humans, mouse = no mind = machine = usable for vivisection? Or is this just our abstract explanation, and practices continue to follow their own logic, their own urgency? To understand how the abstract and the concrete inter-relate, how theory and practice shape each-other, is an important endeavour. As geographers we are ideally suited to explore the complex crossboundary processes involved in the social construction of nature; we only need the open-mindedness and interest to work across the boundaries of various time-space scales as well as those which sadly divide our own discipline.

Notes

1. I shall use 'nature' when referring to it as a category, and nature when referring to the life and nonlife forms gathered under that category.

2. For an actual attempt to apply the metaphor of cyborg to remedy the nature/society divide see Swyngedouw (1996).

3. Foucault's view of the body and its relation to power and space has been employed in geography by various writers (see Driver, 1985; Matless, 1992b).

4. That reason has generally been considered a male attribute and emotion a female attribute is important in relation to Lackoff's notion of crossconceptual mapping. As Merchant (1980) has shown, this dualism links with other dualisms characteristic of western thought (e.g., nature/society, subject/object, etc.). One implication of the reason/emotion dualism can be seen in the division of labour. Women, for example, were long perceived unsuitable for the profession of scientist – scientific activity being considered a rational, objective – thus male – endeavour.

5. Good examples are OncoMouse or SimEve (see Haraway, in Cronon, 1995).

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