Human geographies of climate change: Landscape, temporality, and lay knowledges

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Abstract
In this paper we bring together work on landscape, temporality and lay knowledges to propose new ways of understanding climate change. A focus on the familiar landscapes of everyday life offers an opportunity to examine how climate change could be researched as a relational phenomenon, understood on a local level, with distinctive spatialities and temporalities. Climate change can be observed in relation to landscape but also felt, sensed, apprehended emotionally as part of the fabric of everyday life in which acceptance, denial, resignation and action co-exist as personal and social responses to the local manifestations of a global problem.

Keywords
climate change, everyday life, landscape, lay knowledge, temporality

I Introduction
This paper outlines a research agenda for taking forward work on landscape in cultures of climate change. It draws on and develops the recent interest in climate change from cultural geographers, historians of science and others, much of which argues for a more grounded and localized understanding of climate change (see, for example, Bailey, 2008; Betsill and Bulkeley, 2002; Hulme, 2008; Palutikof et al., 2004; Slocum, 2004). In this paper, we briefly review the terrain of the debate on cultures of climate change and suggest how its various concerns can be pursued through research which takes landscape and climate change as its organizing themes. Several important, emerging and linked issues define both the current limits and the future possibilities of a cultural geography of climate change examined in this paper. These are, broadly speaking, landscape, temporalities and lay knowledges. We review these themes below. We begin, however, by considering what we mean by the phrase climate change.

II Framing climate change
‘Climate change’ is an ideologically charged phrase, a thorough unpacking of which is

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beyond the scope of this paper. Nevertheless, we wish to acknowledge the inconsistencies and ambiguities that stalk the phrase, along with the intellectual ideological loading, the assignment of cause, the attribution of blame and the patina of doubt that surround the term (see, for example, Whitmarsh, 2009). However, in considering the relations between landscape and climate change, it is important not to treat climate change (or indeed climate) as a super-organic entity that shapes landscape in the way that Sauer imagined culture. Landscape should not become some kind of Ouija board for channelling climate change as something homogenous and undifferentiated, notable only by its effects and exercising causative power. In thinking through the relations between climate change and landscape, we can learn much from the histories of our own discipline, particularly the moment when cultural geographers started to recognize culture as the thing to be explained, rather than the thing that explains (in the stirrings of what was then called ‘new cultural geography’).

Similarly, much writing about climate change tends to treat it, perhaps unwittingly, as something that bears down on us, something imminent which yields itself only to science (an argument that we outline in section IV). Recent philosophizing about climate change has shown how it is marked in a particular way by scientific epistemologies, taxonomies and measurement regimes (Demeritt, 2009; Hulme, 2009; Wilbanks and Kaytes, 1999), but nevertheless leaves relatively unchallenged the idea that climate change is the thing that explains – extreme weather, catastrophic events, risk, threats to biodiversity, peril. Our cultural geographies now need to account for climate change as the thing to be explained. In this section we discuss some of the ambiguities in the concept before turning to work which has been done using a social science approach to the study of climate change.

I Climate change ambiguities

At the heart of the ambiguities surrounding climate change are the differing definitions of the term used by the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC), respectively. The former defines climate change as ‘a change of climate that is attributed directly or indirectly to human activity, that alters the composition of the global atmosphere, and that is in addition to natural climate variability over comparable time periods’ (UNFCCC, 2010). In contrast, the IPCC definition of climate change does not distinguish between natural variability and anthropogenic forcing. The real material consequences attributed to this lack of clarity are physical, social and political, including sea-level rise and loss of habitat as well as a stalemate in international dialogue on climate policy, lack of effective energy policy, loss of livelihoods and impacts on human health (see, for example, McMichael et al., 2003; Pielke, 2004; Piguet, 2008). Definitional problems with the key phrase ‘climate change’ are compounded by unclear definitions of associated terms such as climate variation, climate fluctuation and climatic variability which, as Lars (1993) argues, might not be a problem for a scientific community but creates difficulties when transferred into a political or socio-economic context to construct – among other things – emissions targets, policy instruments, legal frameworks, treaties, regulations, taxes and subsidies (Leiserowitz, 2005; Osofsky, 2005).

In light of this definitional ambiguity, climate change is, then, simultaneously a reality, an agenda, a problem and a context. It remains the source of much difficulty in the science, politics and cultures of climate change. For this reason in this paper we attempt a more open and inclusive formulation – climate and the ways it might change – that allows different ways of knowing to play a legitimate part in framing a relationship
with landscape. This formulation draws on the epistemologies of the social sciences and humanities, and it is this approach that we explain in the next section.

2 Climate and the ways it might change

Climate has long been the domain of the natural scientist, often defined in purely physical terms. It is only relatively recently that natural scientists, such as Hulme, have started to suggest that climate is ‘a quantity wholly disembodied from its multiple and contradictory meanings’ (Hulme, 2008: 6) and called for the intervention of social scientists to understand more about human impacts and responses (Hulme, 2009; see Moser, 2010; Slocum, 2009). However, even a cursory glance at the pages of the journal *Climatic Change*, to take but one example, will show that this work has been ongoing for some time through research which attempts to describe, evaluate, quantify and model perceptions of climate change, understandings of risk and construction of policy (to name but three topics; see, for example, Berk and Schulman, 1995; Jaeger et al., 1993; Rayner and Malone, 1998; Smit et al., 1996). Although reconstructing the genealogy of climate change in the social sciences and humanities is not the work of this paper, it is notable that back in 1993 Jaeger et al. were able to identify work on the human dimensions of global climatic change, albeit at an early stage. More recently, Batterbury (2008) sketches out a history of work on global warming in anthropology dating from the mid-1990s.

Nevertheless, despite the now substantial literature that is informed by the methods, theories and epistemologies of social science, there is still a marked dearth of engagement with critical and cultural theories which bring a different sort of interpretative leverage to questions about the human dimensions of climate change by focusing (broadly speaking) on the way space, power, identity and knowledge constitute social relations (exceptions, not all of which are focused on climate change but human-environment relations and knowledges more generally, are: Clark, 2000, 2005, 2007; Ingold, 2006; Ingold and Kurttila, 2000; Slocum, 2004, 2009). Recent sessions at the Royal Geographical Society (with IBG) Annual Conference in 2009 on such topics as Cultural Spaces of Climate and Geographies of the Seasons confirm the salience of a more critical and contextual approach. Further, a recent special issue of the *Journal of Historical Geography* (Bravo, 2009; Daniels and Endfield, 2009; Hamblyn, 2009; Liverman, 2009) marks a trend in histories of science towards histories of climate science and change.

In addition to scholarly manoeuvres, there is now a demand (largely from scientists and policy-makers frustrated with the lack of public engagement and the concomitant failure of the deficit model) to understand what climate change means to so-called ‘ordinary’ people (Bostrom et al., 1994; Hanski, 2008; Lorenzoni et al., 2007; Manzo, 2010). The relative neglect of this theme lies, as Demeritt (2001a) notes, in the way that the IPCC and other national and international scientific bodies have tended to see atmospheric emissions as a universal and global-scale problem affecting the climate system of the whole planet. The result has been that the scientific study of the problem has been decoupled from the social and political contexts of its material production and cognitive understanding (Agrawal and Narain, 1991). Nevertheless, it is now recognized that environmental knowledges, including those surrounding climate change, need to be understood on a local scale.

Researchers are slowly becoming more interested in publics for whom popular representations of melting polar ice caps and homeless polar bears have little currency and are far removed from actual (possibly minimal) experiences of climate or climate change (O’Neill and Nicholson-Cole, 2009; Slocum, 2004; Wilbanks and Kates, 1999). Such climate knowledges also need to be more carefully calibrated with phenomena such as weather and the seasons which
form part of the same lexicon but are far from synonymous. Thus, using ‘climate and the ways it may change’ in preference to ‘climate change’ enables a relational approach to emerge which: (1) does not insist on research participants being able to disentangle anthropogenic causes from natural causes of climate change; (2) acknowledges the way an understanding of climate change is conjoined with other kinds of knowledge about the local environment; and (3) allows different ways of knowing to play a legitimate part in framing a culture of climate change. Thus lay knowledges of both climate and climate change are considered important in this formulation.

Useful though recent work on the emerging cultures of climate change has been in identifying potentially fruitful directions for research which is more ‘grounded’, it is ironically the ‘ground’ that is missing from recent accounts. Landscape – a central tenet of cultural geography for over 80 years – is, curiously, elided. This is despite the claims of geographers that geography is the natural home of research which takes a more interpretative approach to climate change while at the same time offering ‘a critical reading of the natural sciences ... informed by a spatially contingent view of knowledge’ (Hulme, 2008: 5; see also Demeritt, 2009; Harrison et al., 2004). In this paper, we show that there is now an opportunity to explore how individuals and communities understand climate and the ways it might change in the context of local landscapes and environmental challenges, researched as a lived experience with a unique set of geographies, lay knowledges, and participative practices. In so doing, we build on the work of Slocum (2004) and Hinchliffe (1996) among others who have examined local environmental knowledge in the context of everyday life. In this paper we foreground landscape as an organizing concept. We explore this in more detail in the next section, before moving on to look at the importance of future-orientated temporalities and lay knowledges to our focus on familiar landscapes.

III Landscape

In our geographical imaginations, landscape has long been understood as both spatial and cultural, the relative importance of these shifting with theoretical fashion (for a review, see Colten, 2010). Because of the varied ways in which the concept of landscape is used across the natural sciences, social sciences and humanities it is important to clarify how we are using it in this paper and how it has so far been used in relation to the study of climate change. We confine ourselves to the treatment of landscape primarily in geography and related disciplines.

Landscape as the ‘combined, interacting effects of multiple environmental controls and forcings’ (Phillips, 2007: 160) is a unit of analysis well understood by physical geographers and the natural sciences more widely (see also Brierley, 2010). It is this idea of landscape as a particular scale of spatial analysis which has featured heavily in the literature on human impacts of climate change. For example, the study of human-environment relations via an ecological approach forms the basis of McIntosh et al.’s (2000) collection of essays on climate, history and human action. Landscape, in this instance, comprises all the physical, biological and cultural phenomena interacting in a region, exhibiting historical ‘depth’ in the shape of the residues of antecedent landscapes. This landscape is the object of study for geomorphologists, palaeobotanists, ecologists, archaeologists and others interested in examining the interactions between the human and biophysical elements (see also, among many examples, Behringer, 2009; Crumley, 1994).

Within geography, alternative ways of conceptualizing landscapes have their provenance in a humanistic tradition. Several intellectual threads highlighting the multifarious ways in which ‘cultural landscapes’ have been imagined by geographers are summarized succinctly by Rose (2002):

While on the one hand [landscape] defines a specific environment, on the other it represents ‘the
appearance of a land as we perceive it’ (Hartshorne, 1939, p.150, also see Olwig, 1996). From its inception the landscape’s status as an object, its physical presence as an environment has been conceptualized in terms of how it appears. For J.B. Jackson, the landscape is ‘a portion of the earth’s surface that can be comprehended at a glance’ (1984, p.3); for Lewis it is ‘our unwitting autobiography, reflecting our tastes, our values, our aspirations, and even our fears, in tangible, visible form’ (1979, p.12); for Tuan, it ‘appears to us through an effort of the imagination exercised over ... sense data’ (Tuan, 1979, p.90); and, for Cosgrove, the landscape ‘is a way of seeing, a composition and structuring of the world so that it may be appropriated by a detached, individual spectator to whom an illusion of order and control is offered through the composition of space’ (Cosgrove, 1985, p.55). (Rose, 2002: 456)

Added to these is a further theoretical pathway that has its roots in the phenomenological thinking of, among others, Maurice Merleau-Ponty (1968), and which emphasizes what Wylie calls ‘the mutual embeddedness and interconnectivity of self, body and land – landscape as the world we live in, a constantly emergent perceptual and material milieu’ (Wylie, 2007: 1–2). This approach to landscape has yet to feature prominently in academic writing about climates and the ways they might change (an important exception is Hinchliffe, 2010). Before saying more about how this could be remedied, it is important to discuss our approach in more detail.

Within the eclectic history of the concept of landscape in human geography, it is possible to detect an important shift from landscape as an object with a distanced observer located in a system of representation to a concern with landscape as a subject-object relationship. The appeal of this approach to landscape is signalled by the rapid diffusion over the last ten years or so of a new theoretical repertoire using the languages of performance, dwelling, and embodiment to make sense of people’s encounters with space and place.5 By adopting this theoretical apparatus, landscape is not only made through representation, but is also a practice. Landscape is not treated primarily as a visual phenomenon, but one which ‘comes into being, as forms of presence, through the physical, tactile, and sensory process[es]’ (Rose, 2006: 538). Phenomenologically inspired theorizations of landscape, then, do not see it as a reflection of a cultural system, but instead ask how we can ‘explore the creative modalities through which ... affections, imaginations, or envisionings of culture and landscape are expressed’ (Rose, 2006: 538).

Although, as we have noted above, several authors have called for the intervention of social sciences and (to a lesser extent) the humanities into the study of climate change, it is only very recently that an explicit appeal has been issued to consider what might be generalized as ‘cultural landscapes’. Adger et al. (2009: 348) recognize landscapes as ‘dynamic social constructions which reflect process and change through historical and contextual experience’, the symbolic meanings of which have cultural implications. They note that climate change discussions which focus on biophysical transformations and economic implications measured through utilitarian metrics ‘frequently fail to recognise that the experienced worlds of individuals and communities are bound up in local places and that the physical changes will have profound cultural and symbolic impacts’ (Adger et al., 2009: 347). Some of this work is already ongoing outside geography; for example, Batterbury (2008) has made the case for the way anthropologists have used local fieldwork to assess indigenous climate and environmental knowledge (see also Strauss and Orlove, 2003). Adger et al. (2009: 339, emphasis added) further speculate that climate change may result in the loss of landscapes that individuals value and that such values ‘are largely independent of material assets, but rather rely on perceptions and representations of the world around us’.

It is part of our argument that landscape – in all its multifarious definitions and theorizations – grounds an understanding of climate and the
ways it might change in a fundamental way. As Henderson (2003: 196) argues, ‘the study of landscape, that thing which so often evokes the plane on which normal, everyday life is lived – precisely because of the premium it places on the everyday – must stand up to the facts of a world in crisis’. We have no wish to deny the validity of other ways of thinking about landscape, but we do wish to make space for a set of ideas that have hitherto been neglected in the study of climate change. We argue that it is precisely the qualities of a newly theorized landscape outlined by Rose and Wylie (2006) that enable the concept of landscape to be used to explore the lived experience of climate and its changes. For them, landscape can:

insinuate itself into vitalist, relational, and topological geographies: landscape reintroduces perspective and contour; texture and feeling; perception and imagination. It is the synthesis of elements, so elegantly traced by topologies, with something added: lightless chasms, passing clouds, airless summits, sweeping sands. (Rose and Wylie, 2006: 477)

Landscape enables us to consider ourselves as ‘being “of”, “in”, and “on” the world all at the same time’ (Rose and Wylie, 2006: 477) and allows us to explore ‘that which is elemental and affective, with landscape, that is, that which is “more-than-representational”’ (Lorimer, 2005), in order to acknowledge the textured, resonant quality of its presence and the various sensibilities its presence affords’ (Rose and Wylie, 2006: 478).

Further, landscape is constitutive of what Ingold (2000) describes as the processes of dwelling, through which familiarity with place is the result of a daily encounter with it (Ingold, 2004). However, our interest here is not only in ‘the texture of the surface’, whereby ‘our life histories are woven, along with life-cycles of plants and animals’ (Ingold, 2000: 198), but also with Ingold’s notion of the ‘weather world’, comprised of sky, earth and ground: ‘to feel the wind is not to make external, tactile contact with our surroundings but to mingle with them. In this mingling, as we live and breathe, the wind, light, and moisture of the sky bind with the substances of the earth in the continual forging of a way through the tangle of life-lines that comprise the land’ (Ingold, 2007: S19).

Climate and the ways it might change, as we argue throughout this paper, need to be discussed in a relational context: a ‘mingling’ of place, personal history, daily life, culture and values (Lorenzoni et al., 2007; Slocum, 2004). By incorporating the themes of climate change, temporalities and lay knowledges, discussed in this paper, into detailed empirical work on landscapes that are practised, embodied and lived, it is possible to gain an understanding of people’s actions, beliefs and values in relation to climate and climate change. This attention to eclectic cultural landscapes also enables us to ask how a variety of publics make sense of climate change, as witnessed and responded to in ordinary, everyday-life scenarios, such as walking, gardening, fishing, sailing and working on the land. Echoing Lorimer (2006), by focusing on ordinary lives, climate and the ways it might change can be explored as a ‘knowledge-in-practice’ and ‘on-the-ground’.

Cultural geographers have long understood the rich experience of being in place, particularly through landscape. By identifying landscape as ‘a matter of walking, working, and engaging with elements of the non-human world’ (Rose and Wylie, 2006: 478), landscape becomes a possible means with which to organize the immediate and future, spatially and temporally intimate relations between people, flora, fauna, topography, environment and, crucially, weather. It is the subtle real and imagined, past, present and future changes in the configuration of land and weather which will become identified as the artifacts of climate change as much as the scientific artifacts of atmospheric CO₂, increases in mean temperature and the circulation of ocean currents.
Thus, landscape provides the means to think through not only the spatialities of climate and its change but also its temporalities, to which we now turn.

IV Temporalities

Time is a *sine qua non* in the study of climate change and yet, despite the immense literature replete with references to past, present and future change, time itself remains a largely unexamined discourse. In this section, we use the work of Gell and Grosz to consider briefly the temporal problems of climate change imaginaries, which are twofold. The first problem is with time, and how it is constructed and theorized. The second, linked problem, is the future, and how it can be imagined. Our aim in this section is not to rewrite the philosophy of time but to think through the risks and possibilities of such a philosophy for imagining climate change. Later in this paper, we connect this debate to our thinking on landscape in order to explore the intertwining of responsibility, trajectory and futurity.

1 Time

At the risk of characterizing a complex field, there are, broadly speaking, two scholarly apprehensions of time which are of interest here. On the one hand there is an approach which draws on Durkheim and others and asks how time is organized, and why. On the other, there is a body of work which asks what it is that is being organized, and questions the nature of time, characterized by the work of Bergson and Grosz. Each approach seems to take seriously ‘the temporal foundations of matter and culture’ and contests the view that time is ‘a natural medium in which matter and life are framed rather than a dynamic force in their framing’ (Grosz, 1999a: 3).

The problem with time rests in part in how time has been codified by humans (Gell, 1996). The Durkheimian view is that we cannot think about time except in terms of conventional time periodizations, which are socially derived (or, even if they are derived from nature (for example diurnal cycles), are regarded as socially salient). In Gell’s reading of Durkheim, it follows that ‘we cannot have any experience of the objective world except in the light of socially derived periods of duration which constitute the category “time”’ (Gell, 1996: 7). Gell (1996: 13) takes issue with this, arguing that it is possible to ‘demonstrate that the temporal location of an object, or the events in which an object participates, can be specified without reference to a periodic scheme’. The benefits of this for an understanding of climate and the ways it might change are interesting to consider.

In their presentation, climate predictions are anchored on dates in a periodic scheme. Met Office information for the UK on ‘how the climate may change in your region’ offers predictions for the 2050s, while DEFRA-funded UK Climate Projections 09 use 2080 as their point in the future (Met Office, 2009; UKCP09, 2009). This organizes the data and the consumers of this data – Durkheimian fashion – into an end point that is precise (ie, 2050 or 2080) but inconceivably distant for most people. For Anders (1962), writing about the threat of annihilation from the atomic bomb, there is a ‘blindness to the apocalypse’, namely that the threat is perceived to be so distant in time that people are unable to relate to/imagine such an event coming to pass. Thus, climate change is what Dickinson (2009: unpaginated), drawing on Dyson, calls a ‘long threat’ analogous to HIV/AIDS: ‘In short, (i) scientific understanding advances rapidly, but (ii) avoidance, denial, and recrimination characterize the overall societal response, therefore (iii) there is relatively little behavioural change, until (iv) evidence of damage becomes plain’ (Dyson, 2006: 120). The dangers of this are manifest, for, as Anders argues: ‘If we do not stubbornly keep in mind the strong probability of the disaster, and if we do not act accordingly, we will be unable to find a way out’ (Anders, 1962: 505).
The incongruence between scientific knowledge about climate change and the timeframes for individual action are highlighted further by Hulme et al. (2009: 201) who argue that scientific narratives about future climate change are based on intervals of decades to centuries while most people make decisions and structure their behaviour on more immediate timescales. Nestled in the insistence that climate change be made visible and knowable by applying a date are two further issues.

First, the meaning of the dates to a lay consumer of the information is ambiguous. Do they represent an end point (after which nothing is known, or knowable, or predictable)? Do they represent the start of something (if we do not act now, climate change will ‘start’ in 2050)? Do they represent only one stopping-off point in a journey towards an altered state of climate and human existence (no turning back after 2050)? Does their precision mask their uncertainty, and elide climate variability (how much will temperature rise, how much rain will fall, and where)? It is precisely because of a social construction of time as ‘concrete, immanent and process linked’ (Gell, 1996: 17) that imagining a phenomenon like climate change that cannot be defined in these terms remains a problem. How can we understand what is needed to alter the current course of climate change if we are in dispute about what course we are on? The way climate predictions are presented enables rather than constrains this evasion.

The second, linked, issue about a single date is that it is incongruous with the notion of climate itself. The dominant understanding of climate is as a category of knowing made out of approximately 30 years’ worth of meteorological observations including surface variables such as temperature, precipitation and wind (Hulme et al., 2009). As Wilbanks and Kates (1999: 616) note: ‘there remains a significant gap between the climate change forecasting models, the scale at which weather and long-term climate expresses itself, and the local weather of everyday experience’. There is a metaphysical and semiotic problem here with discussing in terms of a future date something that is made of the stuff of everyday life (for example, weather) but which is not, in and of itself, that stuff, but aggregated, averaged, modified, smoothed, stripped of its outliers, rendered in statistical ways that remain mysterious to the majority. As Demeritt (2001a: 314) notes, even the most sophisticated climate model is a form of abstract reasoning that reduces reality ‘to the terms of its own analytical abstractions’. Climate is difficult to grasp because it is not the weather and not the seasons, but an accumulation of data over a timeframe that is perhaps a generation in length. It is a statistical construct, as indicated by the IPCC Fourth Assessment Report’s (AR4) definition of climate as the average weather, or ‘the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years’ (IPCC, 2007: 78).

2 Future
If questions about how time is organized help us to understand the problem of making climate predictions feel real, other questions about the philosophy of time and the nature of the future help us to open up further issues. The ‘future’ is a critical yet unexamined discourse which is fundamentally conjoined with climate change. The science, governance and communication of climate change – with all the associated paraphernalia of prediction, modelling, policy development, mitigation and adaptation – exist to ‘beat a path through events still to come’ (Fish, 2009: 2–3). Taking Fish’s argument about the way notions of the future fashion public policy, it is possible to argue that the science, governance and communication of climate change seek ‘to overcome the unaccomplished and indeterminate qualities of future time by fashioning events around its own substantive visions’ (Fish,
This didactic futurology ‘is designed to foster a sense of obligation and investment in versions of the world that, in the final assessment, may or may not come to pass’ (Fish, 2009: 3). It is the sense of obligation and investment in a version of the world altered by climate change that has clearly proved illusive. As Hulme et al. (2009: 201) note: ‘The currently ‘un-situated’ nature of climate change risks for most individuals in the context of their daily personal and social lives constrains engagement with climate change . . . This distinction in perceptions has significance for the way expectations of future climates are constructed’.

Other ways of theorizing the future may destabilize the determinism that underpins climate change predictions. Dealing with authors who ‘insist on the fundamental openness of time to futurity’, Grosz (1999a: 3) challenges ‘the central position accorded to determinism and to the virtues of a science or knowledge contained by and at the mercy of the imperative of predictability as one of the defining concepts within sciences, recognizing that determinism is the annulling of any concept of temporality other than one structured by the terms and conditions of the past and present’. In terms of climate change, a commitment to openness has political consequences that need to be carefully thought out, particularly in relation to questions of responsibility – from the scale of the individual upwards. It is our apparent inability to conceptualize time beyond the periodic frame of our own lifetimes, or even a generation, and to imagine distant futures in which the climate might be altered, which are at the heart of much anxiety about public responses to climate change (see Hinchliffe, 1996; Hulme, 2007).

Climate predictions are largely deterministic, identifying future climate change as caused by a chain of prior occurrences (some of which are themselves still in the future). Introducing openness, chance, randomness and unpredictability as ‘the essence of a time that is not regulated by causality and determination but unfolds with its own rhythms and logic, its own enigmas and impetus’ (Grosz, 1999a: 4) runs the risk of nurturing uncertainty, apathy and inaction. As Grosz (1999b: 16) notes: ‘predictable, measured, regulated transformation, change under specifiable conditions and with determinate effects, seems a readily presumed social prerequisite; upheaval, the eruption of the event, the emergence of new alignments unpredicted within old networks, threatens to reverse all gains, to position progress on the edge of an abyss, to place chaos at the heart of regulation and orderly development’.

But no matter how attractive determinism might be as a way of identifying causes and consequences as part of a debate about climate change, there remain the problems we have outlined above in framing this debate in terms of timescales that exceed the lifespans of many. So what else does a commitment to openness offer? It offers a future-orientated temporality that refocuses attention away from people’s inability to engage on the terms that science chooses, and enables lay knowledges that are not temporally structured in the same way. We suggest that a future-orientated temporality might also benefit from being grounded locally rather than spatially orientated towards distant places and faraway lands. In this way, a concern with familiar landscapes begins substantive work on the repeated assertion that climate change is not only a global problem, but also a local one (Betsill and Bulkeley, 2002; Hulme, 2008; Somerville, 2006; Wilbanks and Kates, 1999).

3 Landscape and time

Above, we outline an approach to studying climate and the ways it might change that draws on recent theorizations of landscape and in which we discuss the potential of non-representational and phenomenologically inspired approaches in understanding more about landscape and climate change. However, these approaches are problematic in two ways. First, they tend to emphasize
the immediacy of landscape in the making of an emergent subjectivity and, second, the specificity and particularity of the encounter. In other words, it seems that despite the phenomenological underpinnings of the work on becoming from Grosz and others, the phenomenological work on landscape from within geography finds it difficult to accommodate the future-orientated temporality that might enable a discussion of climate and the ways it might change in relation to local and familiar landscapes. Belonging only to an individual at a particular moment, temporary and transient, current reflections on landscape leave little room for: (1) the historical associations that insinuate the embodied encounter no matter what; (2) (more crucially in the case of climate change) an imagining of a future; and (3) a consideration of who is made more vulnerable by climate change. However, Ingold and Massey’s reflections on dwelling and space, respectively, might help overcome at least some of these particular shortcomings.

The perspective of dwelling enables us to view landscape as ‘perpetually under construction’, ‘always in the nature of work in progress’ (Ingold, 2000: 199). For Ingold, dwelling is fundamentally temporal. Those dwelling in the landscape become familiar with its cycles and the ‘rhythmic interrelations or patterns of resonance’ (Ingold, 2000: 208) – for example, the seasons or weather. In our understanding of landscape in cultures of climate and the ways it might change, it is vital to examine embodied engagements with landscape: ‘how (non)human actants are embedded in landscapes and places as well as networks, how nature and culture are bound together in place, and how these formations invariably have a time-depth where past, present and future are interconnected’ (Cloke and Jones, 2001: 664). As Ingold argues, ‘the rhythmic pattern of human activities nests within the wider pattern of activity of all so-called living things, which nests within the life-process of the world’ (Ingold, 2000: 201). Ingold also challenges us to recognize the landscape as being with us, but also beyond us, spatially and temporally. This echoes Massey’s (2005) conception of space as the product of interrelations, always in process and characterized as a sphere in which distinct trajectories co-exist. Massey also considers the consequences of this theorization of space for our understanding of the future, arguing that ‘only if the future is open is there any ground for a politics which can make a difference’ (Massey, 2005: 11). Thus, a future-orientated temporality can seek to ground the idea of climate change in landscape, recognize multiple trajectories and ‘a simultaneity of stories-so-far’ (Massey, 2005: 24), as well as inspire the imagination to think differently about past, present and future in relation to self and place. Landscape, theorized as a category of social-spatial relation which we can be of, in and on, becomes ‘the realm of the configuration of potentially dissonant (or concordant) narratives ... the spatial in its role of bringing distinct temporalities into new configurations sets off new social processes’ (Massey, 2005: 71). It addresses Grosz’s problem (1999b: 19) of ‘how to think of direction or trajectory without being able to anticipate a destination?’.

In the next section, we explore the importance of lay knowledges in our approach to questions of landscape and temporalities.

V Lay knowledges

As suggested above, there is a problem with science as the discourse through which climate change is popularly understood. Nevertheless, some understanding (scientific and non-scientific) of climate and the ways it might change has unquestionably worked its way into a set of imaginaries that are beyond science as a community of practice and scientists as the producers and arbiters of a particular kind of knowledge. This assertion goes beyond a discussion about whether science is socially
constructed (see the exchanges between Demeritt, 2001a, 2001b, and Schneider, 2001). Rather, we would suggest that, despite the persistence in the west that science is at the ‘top of a hierarchy of ways of knowing’ (Mellor, 2003: 509; see also Harvey, 2007; Livingstone, 2003), science is certainly not the only venue in which climate change knowledges are made or through which they are circulated. They are also made and circulated – modified by a perhaps tangential, infrequent, incomplete, partial encounter with ‘science’ – as lay knowledges.

Cerezo and Garcia (1996) provide a useful definition, which distinguishes scientific from lay knowledges. Speaking of knowledge as the ‘claims or assertions which are generally accepted as warranted within a given social (cultural and historical) context’, they suggest that it is ‘the cultural variable (within the social context) that makes the difference between lay and expert knowledge: it is the difference between claims held as warranted by the relevant scientific community or by corresponding lay believers’ (Cerezo and Garcia, 1996: 54).

Harvey (2007: 31) exhibits a degree of discomfort with the distinction between science and non-science, arguing that ‘it is not possible to demarcate something called “science” from something called “non-science” on any of the usually presumed criteria such as activities and practices, knowledge domains, or sets of norms, standards and culture’. However, he has also shown that the distinction is perpetuated through rhetorical or discursive strategies that continue to ‘maintain science at the top’. When these ‘fail’ in some way and the social relations through which scientific knowledge is constructed are exposed, findings are discredited and distrust follows (Demeritt, 2001a).13 Harvey (2007: 45) explores the strength of these discursive strategies and the public’s support of science ‘as a useful and purposeful knowledge-making device where propositional questions can be posed and answered in the absence of interests’.

Even despite an extensive literature in Science and Technology Studies and debates surrounding the public understanding of science, which acknowledge that science is not neutral and value free, Wynne (2001: 445) continues to suggest that a distinction between science and non-science is maintained by a scientific, technological or expert community. He argues that ‘long-standing, deeply cultural presumptions of a categorical divide between factual, objective and real knowledge on the one hand, and cognitively empty emotion or values on the other’ are reproduced.14 He continues: ‘whilst science looks after the former, lay publics are only capable of taking sentimental, emotional and intellectually vacuous positions’ (Wynne, 2001: 445). Notwithstanding this position, lay knowledges are actively ‘in play’, as Cerezo and Garcia (1996), for example, show in their analysis of the role that lay knowledges should have in technology and environment-related issues and knowledge controversies (see also Ellis and Waterton, 2005; Whatmore, 2009).

The paradox is a tricky one. Following Cerezo and Garcia (1996: 54), we would suggest that the social context of scientific knowledge about climate change has not provided it with ‘an epistemic excellence which renders it self-sufficient’ for dealing with a given technological or environmental problem – that is, communicating the science of climate change and possible routes to adaptation and mitigation (see also Ingold and Kurttila, 2000, on the way indigenous knowledges are constructed and appropriated by ‘science’). The problem is reflected in work by, for example, Lorenzoni et al. (2007) who demonstrate that the quality of climate change science and consensus have not been enough to compel people to change their behaviour (see also Lowe et al., 2006; Ockwell et al., 2009; O’Connor et al., 1999). Indeed, the ‘provision of scientifically sound information as a means to educate the public, change behaviour and gain support for policy’ has not succeeded precisely because ‘interpretations of science by
the public are mediated by societal values, personal experience, and other contextual factors’ (Lorenzoni et al., 2007: 446; see also Kahlor and Rosenthal, 2009, for a review of models of public engagement and scientific literacy). Dickinson (2009: unpaginated) confirms Lorenzoni et al.’s assessment by questioning whether an increased knowledge of the dangers of climate change would generate a ‘sustained rational response’.

On the other side of this problem, lay knowledges of climate change have also not achieved the rhetorical power of scientific knowledges despite their potential to contribute in the long run to ‘an effective (not merely legitimate) solution of the problems currently tackled by expertise’ (Cerezo and Garcia, 1996: 55). According to DEFRA, only 1% of the English public have not heard of climate change, global warming or the greenhouse effect (DEFRA, 2009). Thus, it seems likely that lay understandings of climate change shape, and are shaped by, the associations of the climate in everyday lives and familiar landscapes. However, these associations have failed to inspire behavioural change (Lorenzoni et al., 2007), hinting at the problems with the deficit model that we alluded to earlier in this paper.

The failings of the deficit model are neatly illustrated by Cabecinhas et al. (2006: 504) who insist ‘that having an accurate knowledge of climate change is a requirement for displaying attitudes and behaviours aiming at the resolution of the problem and for being able to engage in informed discussions on scientific and policy dimensions’, but then go on to present research which amply demonstrates the ambiguities, complexities and contingencies of people’s lay understandings of climate change. They admit that engaging the public is a very demanding and challenging task (Cabecinhas et al., 2006), which starts to beg the question of whether this is the right task at all. They are not alone in their unwavering insistence that if only the ‘public’ had ‘a correct understanding of the causes of global warming’ (Bord et al., 2000: 205, emphasis added), changes in behaviour that would benefit both adaptation and mitigation would immediately and unproblematically follow. This assertion is shared, for example, by Bostrom et al. (1994: 959, emphasis added) who boldly state that ‘in order to educate the citizenry, we must start by educating ourselves about what they already know and believe and how it differs from what they need to know in order to make effective decisions’. This sentiment is echoed by Maibach and Hornig Priest (2009) who suggest that researchers must think more carefully about the knowledge they choose to communicate to the public and moreover how this will be interpreted (see also Whatmore, 2009, on knowledge controversies).

So why is it necessary to know what a scientist knows in order to take a view on climate change? In their study of public participation in Integrated Assessment (IA), Darier et al. (1999: 351) argue that ‘it is unclear why the public should – or even want to – approach issues (such as climate change) from the epistemologically privileged expert-framed perspectives of IA’. Their analysis of lay knowledges reveals the ‘already existing, always context-dependent complexity, diversity, richness and ambiguity of lay knowledge’ (Darier et al., 1999: 351; Whatmore, 2009).

A focus on familiar landscapes allows us to consider the nature of lay knowledges of climate and the ways it might change, accumulated and enacted outside the spaces, conventions, rigours and epistemology of science. Critically, however, this is not about assessing lay knowledges for accuracy, veracity and legitimacy, or its proximity or distance from a set of scientific knowledges. This, surely, must be understood as fruitless, given the number of studies which have noted the continued and consistent failure of scientific ‘fact’ to insinuate itself into a repertoire of ‘public’ knowledge and inspire behavioural change (Bord et al., 1998; Lorenzoni et al., 2007; Semenza et al., 2008). Rather, it is more productive to ask how do people make sense of climate and the ways it might change
as both a physical and intellectual artifact? How do they link it to their lives, and cope with it in the context of their daily lives? Is it even possible to speak of climate change in relation to daily life when the temporal and spatial scales under discussion are so seemingly incompatible?

Answering these questions entails a more nuanced approach to the relations between lay and scientific knowledges, asking: (1) how lay and scientific knowledges co-construct a shared representation of the climate system while remaining respectful of epistemological differences in their approach; and (2) how lay knowledges might ignore, resist or remain indifferent to science but still motivate people to act on climate change. As Wynne (2001: 445) puts it: ‘This alternative understanding of the basic forces and responsibilities underlying public responses recognizes that they have intellectual substance, which of course is always fallible and arguable, yet their intellectual substance does not correspond with institutional expert categories, since it goes much deeper than simply “disagreeing with” or “rejecting” expert views’.

A concern with landscape gives fresh impetus to a concern with lay knowledges which are made in and through an engagement with landscape that is not only visual but also visceral (see Gregory and Miller, 1998, on the value of local knowledge). Climate and its changes might not only be observed in relation to landscape but also felt, sensed, apprehended emotionally, passing noticed and unnoticed as part of the fabric of everyday life in which acceptance, denial, resignation and action co-exist as personal and social responses to the local manifestations of a global problem.

VI Conclusions

In this paper, we have outlined an agenda for taking forward work on landscape in cultures of climate change. Taking landscape, temporalities and lay knowledges as our organizing themes, we have set out an emergent cultural geography of climate and the ways it might change, and examined how it might be grounded and localized through the concept of familiar – embodied, practised and lived – landscapes of everyday life. In this final section, we draw out three important conclusions to take this work forward.

First, a focus on landscape gives substance to the widely cited assertion that human geographers are uniquely positioned to study the social, cultural, ethical and political impacts of climate change. Although Hulme (2008: 8) notes that ‘Geographers are well placed to do the imaginative yet meticulous work of revealing the local roots of climate meanings’, landscape (as understood by cultural geographers) has not been recognized as a means by which this is to be achieved. Landscape provides a way of making climate relevant as a physical and intellectual artifact and an embodied and experiential process, and thereby providing the means to imagine climate and the ways it might change. It does the work of ‘allowing climate to travel and cross scales without losing . . . essential anchors and narratives’ (Hulme, 2008: 8). A focus on familiar landscapes offers that opportunity for engagement and understanding using a scale and rhetoric accessible to scientists, the public and active groups of green/climate change citizens. As a richly theorized concept, landscape enables us to study present-day and future questions of citizenship and responsibility, cultural histories, contested imaginaries, scientific interpretations and physical manifestations of climate change. Moreover, a concern with landscape helps us to ‘re-balance spatial insensitivities in current academic debates’ (Bailey, 2008: 420), not only on climate policy, as Bailey argues, but on climate change more generally. In this sense, our ‘ground’ in this paper is physical, metaphorical and discursive.

Second, a more grounded approach to climate change insists on a greater sensitivity to questions of scale, both spatial and temporal. A concern with local and familiar landscapes helps us to understand how people connect with the life
cycles of geology, weather, plants and animals and envision the real or imagined, current or projected impacts of climate change on them. To paraphrase Grosz, writing about biology, climate occupies a space between the natural and the cultural (in as much as these categorizations are useful), and our understanding of how climate might change is ‘opened up by the transformation the cultural enacts or requires’ (Grosz, 2004: 1). Contemplating individual action in relation to self and place also entails thinking about time. We argue for a future-orientated temporality committed to openness that sets aside the relatively deterministic understandings of climate and the ways it might change offered by the natural sciences. Through this theoretical lens, it may be possible to see the development of environmental knowledge in which individual, group, community and government actions are renegotiated in the light of new understandings about climate and the ways it might change.

Third, combining landscape with the openness of futurity entails valuing lay knowledges differently. Those who live and work in these landscapes should be our concern, along with how they understand, imagine, witness and experience weather and place changing over time (Cresswell, 2003; Lorimer, 2006) and how such knowledges and practices encounter and modify or are modified by climate science. Further research might ask how these relatively unfamiliar lay knowledges, often dismissed by ‘experts’, could contribute to the study of climate by natural scientists, the organization and implementation of environmental and social policy on climate change, as well as the emerging body of work on the culture of climate and the ways it might change. In sum, climate change is a relational phenomenon that needs to be understood on a local level, attending to its distinctive spatialities and temporalities.

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Notes

1. Perhaps those working with critical and cultural theories have been cautious in case the general ‘deconstructive’ trend of this sort of work is seen as either denying the validity of science or giving credence to climate change contrarians (eg, climate change could be seen as ‘socially constructed’).

2. The deficit model is one which assumes ‘public deficiency, but scientific sufficiency’ (Miller, 2001: 116). In a one-way, top-down communication process, scientists fill the knowledge vacuum in a scientifically illiterate general public (Miller, 2001). Though subject to critique (see, for example, Sturgis and Allum, 2004), it is a model that still inflects much writing about climate change science, as we show in section V.

3. Readers interested in the multifarious ways landscape is rendered across a range of disciplines should consult the multidisciplinary journal Landscape Research.

4. The 2008 reprint of Edward Relph’s Place and Placelessness first published in 1976 attests to the persistent appeal of this sort of approach in human geography.

5. Although it is not possible in the space available to detail the complex theoretical entanglements that inform this work, it takes its cue from non-representational theory, aspects of phenomenology and elements of performativity. These approaches do not map neatly onto each other. See Lorimer (2005, 2007, 2008) in this journal for an excellent review of these developments in geography.

6. In fact, time treated as a passive container for social life echoes the view of space in geography before the concept was extensively retheorized.

7. Gell (1996) uses the example of a battle in the Napoleonic Wars to illustrate this point. Using the periodic scheme of the calendar, the battle of Borodino
took place on 7 September 1811. Alternatively, it could be identified as the battle which happened after Austerlitz and before Waterloo in a non-periodic sequence of famous battles in the Napoleonic Wars.

8. See Hanski (2008) for a detailed discussion of the limits to cognition of time. These limits are not, apparently, universal. Kastens et al. (2009: 265) argue that the natural ability of geoscientists to take a long view of time should be mobilized to ‘provide a crucial counterweight and support decision making with a time horizon of decades to centuries’. This would in turn help us to ‘take more seriously the prospect that tiny but cumulative forcings leveraged over long intervals of time can cause profound changes to the planet’ (Kastens et al., 2009: 265).

9. The questions and opinions in this section were voiced at a community event in August 2009 in Porthscatho on the Roseland Peninsula, Cornwall, where UKCP09 regional projections for the UK and Met Office predictions based on UKCP09 data formed part of a display on local climate change hosted by the University of Exeter.

10. This might be a function of the very different ways in which concepts like becoming and theories like phenomenology ‘travel’ between disciplines and are differently worked through.

11. For a critique of the implied introversion of phenomenological accounts of landscape, see the discussion between Wylie (2005a, 2005b) and Blacksell (2005). See also Jones’ (2009) critique of theories of relational space that do not pay attention to the role of inherited relationships, activities, events and practices in making social relations in space.

12. Some of these debates about temporality are starting to emerge in historical geography in a discussion of counterfactual history, futures that may not come to pass and the historical geographies of ‘what might have been’ (see Day, 2010).

13. The recent ‘climategate’ scandal involving emails between scientists in which they discussed adjusting the data is a case in point (see http://www.independent.co.uk/environment/climate-change/climategate-scientist-hid-flaws-in-data-say-sceptics-1886487.html).

14. This is reflected in the epistemological divide between the natural sciences, social sciences and humanities which dogs efforts to achieve a truly interdisciplinary approach to climate change that reaches across these areas (Oughton and Bracken, 2009).

15. Integrated Assessment (IA) can be defined as ‘an interdisciplinary process of combining, interpreting and communicating knowledge from diverse scientific disciplines in such a way that the whole cause-effect chain of a problem can be evaluated from a synoptic perspective’ (van der Sluijs, 2002: 250).

References


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