

Exploring the Legal and Criminological Consequences of Climate Change: An Introduction

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BACKGROUND

IT IS NOW beyond any reasonable argument that the consequences of climate change are both inevitable and likely to be considerable. Such consequences, although initially 'physical' in their nature (ie increases in temperature, floods, extreme climatic variations, soil erosion and desertification) are also going to be experienced along social and economic axes in the form of migration, losses or withdrawal of resources, displacement of peoples, cultural dislocation, anxiety, community stress and the such like. These processes will have knock on consequences for society and the legal and statutory systems that exist to regulate behaviour. While legal scholars have been considering the legal framework to tackle climate change for over two decades, both lawyers and criminologists have only recently started to think through, and holistically about, the consequences of climate change for European and global society.

It is entirely understandable that attention so far has been placed on the immediate physical ramifications of climate change (such as land erosion, increased flooding, habitat loss and threats to bio-diversity) and the immediate economic and social impacts of such changes (damage to buildings, loss of infrastructure, migration and ill health). However, consideration ought also to be given not only to the longer-term financial implications but also to some of the less tangible social, normative, legal and criminological impacts.

This book stems from a seminar (held in April 2010 at the International Institute for the Sociology of Law, Oñati, Spain, supported by a grant from the British Academy) which explored the likely legal and criminological consequences of climate change for the European Union and the

international community, as well as potential synergies between the two disciplinary foci. Our aim in producing this collection is to encourage, amongst legal scholars and criminologists, a consideration of the consequences of climate change for these fields of research. The collection brings together scholars of criminology and law in order to provide a unique, inter-disciplinary exploration of the ways in which climate change does or could impact on our societies. Such an inter-disciplinary approach is necessary given that climate change is a multifaceted phenomenon and one which is intimately linked across disciplines. To study this topic from the point of view of a single discipline would restrict our understanding of the concerns of climate change. Our ultimate objective is to identify emerging areas of concern; suggest directions forward; and to illuminate urgent areas for future research.

OUR FOCUS AND THE THEMES OF THE COLLECTION

We start with two chapters aimed at setting the scene for much of what follows. Farrall explores what climate change might do to our societies and hence to our experiences of crime and the consequences of climate change unfold in time and space. His 'thinking through' of what might happen (pieced together from what we know about climate change and the causes of crime) stands as an invitation to others to explore in greater detail how such processes may actually unfold (or are unfolding). For example, increases in the variability of weather systems, and the attendant problems of forecasting 'weather events' (such as the storms/floods and bush fires in Europe in the summer of 2007) will pose problems for those estimating insurance risks. In light of this, insurers may increase premiums 'across the board', creating an impression that they are exploiting the situation in order to increase profits. This may lead to an erosion of confidence in the insurance sector, and lead to widespread mis- or over-claiming amongst consumers as they try to 'fight back' against what they see as exploitative prices. As increased demands are placed upon member state and EU-provided services by climate change, so taxation (both of citizens and businesses) may need to be increased in order to pay for such services. Since many people may not wish to pay increased rates of taxation, so rates of taxation avoidance may increase. This will have consequences for not just those services provided for by taxation, but will also see increased demands placed upon those who regulate and police the taxation system. Redgwell examines the international legal challenges of a lower carbon future, in particular whether existing international legal tools are 'fit for the purpose'. This includes analysis not only of the existing climate change legal regime but also of alternatives to carbon based fuels and the legal implications of 'technological fixes' such as carbon capture and storage and geo-engineering.

Hilson provides an intriguing account of how climate change litigation is evolving, from a social movement perspective. Hilson argues that framing (the struggle over ideas and the meanings attached to them) has been central to many 'green' social movements' actions and reactions to these. Thus, the police, prosecution authorities and media reporting of climate change protest have tended to apply a 'hard' frame, whereby the protesters are constructed as at best criminals or, at worst, extremists or terrorists who are threatening not only law and order but also industrial and aviation security. The climate change movement has subsequently attempted to reframe using 'soft' counter-frames, in which they seek to construct themselves as 'reasonable' citizens, acting in the public interest, and upholding the rule of law.

White explores how particular strategies adopted as solutions to the problem of climate change are, in turn, generating new forms of social and environmental harm. Examples of such paradoxical harm include the adoption of compact fluorescent light globes to save energy (but which contain toxic mercury) and the promotion of nuclear energy (but which involves disposal of nuclear waste). Bio-security in the context of climate change, as informed by notions of the national interest, is also linked to harms associated with climate-induced migration, conflicts over food and water, and the transformation of food crops into bio-fuels. From the point of view of an eco-justice perspective, the chapter questions those strategies designed to mitigate or adapt to the effects of global warming in ways that create different or additional kinds of social and ecologic harm. Wheeler explores the extent to which shareholder activism and the creativity captured by intellectual property rights that exist within the boundaries of the corporation can be harnessed to make concern for the environment and future enjoyment of the environment central to business activity.

Several chapters in the book focus on climate change and security, human rights and migration. Thus, South explores the challenges that climate change brings to rights, civil society movements and the research agenda in the twenty-first Century and Obokata complements this chapter by considering whether a human rights approach can, and should be, applied to climate change. La Chimia investigates the use of development aid assistance by developed countries to address climate change issues and to protect the environment and in so doing explores whether rights within developing countries are enhanced or confounded by the tying of development aid to environment protection goals. Kalogeropoulou examines possible consequences for supplementary pension rights of workers who move between EU member states and the issues that arise in relation to the preservation of relevant pension entitlements. All of these chapters push forward the idea that our conception of terms like 'justice' and 'human rights' may well face challenges as the realities of living with climate change become ever more pressing and apparent.

One of the recent features of international capital has been the tendency for large firms to move capital and resources around the globe relatively easily and with little or no concern for the economic and social impacts of this (eg the opening of overseas call centres, the location of industrial plants in countries with lower staff costs, etc). If, as seems likely, certain parts of the globe start to appear to be geographically or geo-politically insecure, so firms will move capital and resources from such places to safer locales. This 'migration' of capital will leave some areas with little or no legitimate forms of employment, possibly furthering forms of illegal activity. Halsey thus examines the impact of regulation of forests on capitalism, carbon sinks and climate change.

Climate change may force us to start to reconsider some basic ideas of what it means to be a member of society. For example, how will climate change affect our understanding of democracy?; do issues like climate change provide a much more direct connection between the electorate (thus furthering grass-roots democratic movements) or is the threat of climate change better handled at the technocratic level and removed from popular decision-making? At a more global level climate change is by definition a global issue; will it help consolidate the idea of (green) global citizenry, or will it simply promote isolationism and protectionism? Moreover, do issues like climate change alter the nature of the interface between global order and its inception into national consciousness and national regulatory structures, encouraging more permeable legal delimitations? And in addressing climate change, one must be aware that it has been incorporated within the wider debate on 'security': to what extent should environmental issues of this magnitude be considered alongside and as significant as other concerns, currently of more immediate pre-occupation (most notably terrorism)? Doran's chapter speaks to such concerns via a consideration of personal carbon trading schemes, as does Hall's on the relationship between the State and the likely victims of climate change by promoting an interdisciplinary dialogue between victimology and international environmental law. Doran draws on Nikolas Rose's reading of Foucault for insights into the modern construction of 'citizen' and 'consumer'. In particular, Doran relies on Rose's discussion of the new specification of the subject of government to propose that the concept of Personal Carbon Trading (PCT) sits at the apex of a number of debates of interest to the environmental policy community (This included climate change, sustainable consumption and individual freedom in an era of global environmental and resource constraints).

Ahmed and French challenge the 'multilateral' paradigm as the singular approach to climate change in the international law regime. They consider three pairs of competing narratives ('analytical <-> normative', 'atomistic <-> integrationist' and 'localised <-> globalised') which are useful in enhancing our understanding of climate change and environmental law as moving beyond multilateralism. These 'pairs' are not mutually exclusive,

demonstrating that international legal responses to climate change cannot be viewed through uni-focal lenses. The narratives also amplify the tensions which exist within and across narratives, bringing into sharp relief both the need to embrace the diversity of international legal approaches to climate change, while at the same time ensuring that the capacity to use climate change for each and every approach does not gravely endanger the consensus and drive needed to secure its meaningful progress.

Increased immigration to Europe and other regions, such as North America and Australasia is a distinct possibility as some countries in Africa and Asia become climatically less and less habitable. As well as leading to potentially large numbers of displaced peoples, such climatic changes could lead to tensions within affected countries leading to secondary waves of war-induced migration. Will the current levels of human rights protection provided to these different identity groups cope in the new climate? Will public perception exacerbate the problems, leading to restrictive political will to accommodate the human rights concerns of these new communities? Indeed, will all of this lead to a retreat on the willingness to continue to provide rights to existing communities? There may be an increase in racism and xenophobia. As well as increased immigration to Europe, they may well be increased migration within Europe, partly as a 'knock-on' effect, but also as a result of some parts of Europe becoming uninhabitable or less desirable. Accordingly a number of our contributors (principally Farrell, South, Kalogeropoulou and Hall) touch on some of the issues surrounding migration and reflect on what this could mean for legal and criminal justice systems and frameworks.

This collection represents some of the initial forays into this area of research by criminologists and legal scholars. What is clear is that both—alongside sociologists, human geographers, those with an interest in cultural change, psychologists and those studying health—will need to get to grips with these and related issues as the consequences of climate change start to become ever more apparent. We hope that this collection can both assist in helping us grapple with climate change and stimulate other criminologists and legal scholars to pursue these issues as part of their own research agendas.

Where Might We Be Headed? Some of the Possible Consequences of Climate Change for the Criminological Research Agenda

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These findings from Sand Canyon Pueblo suggest that climate-induced food stress and consequent violent conflict contributed to the depopulation of the Mesa Verde region in the late A.D. 1200s.¹

INTRODUCTION

IF THE RECENT reports on climate change are to be believed, and there is growing evidence that they are to be,² then the impacts of climate change on the Earth's eco-system are going to be both dramatic and far-reaching. While it is entirely understandable that government and scientific attention be placed on the immediate physical ramifications of these changes (such as coastal erosion, flooding and habitat loss) and the immediate economic and social impacts of such changes (such as damage to buildings or the degradation or total loss of infrastructure) consideration ought also to be given, not only to the longer-term financial implications,³ but also to some of the less immediately obvious impacts.

* I would like to express my thanks to the following people for comments on earlier drafts of this chapter and for helping me to track down various publications: David Gadd; Clare Jones; Constance Lever-Tracy and my co-editors.

¹ KA Kuckleman, 'The Depopulation of the Sand Canyon Pueblo' (2010) 75 (3) *American Antiquity* 497.

² IPCC (Intergovernmental Panel on Climate Change), *The Physical Science Basis, Contribution of Working Group I to the 4th Assessment Report to the IPCC* (Cambridge, Cambridge University Press, 2007); O Boiral, 'Global Warming: Should Companies Adopt a Proactive Strategy?' (2006) 39 (3) *Long Range Planning* 315–30.

³ N Stern, *Review Report on the Economics of Climate Change* (London, HM Treasury, 2006).

This Chapter seeks to explore *some* of the wider criminological ramifications of climate change for the UK and Europe more widely. The chapter is not intended to be exhaustive, but rather is speculative in both nature and tone. Much of a) what might actually happen as temperatures, sea-levels and rainfall across the globe change and b) how this may affect human societies more generally are far from being clear. What is clear, however, is that few individuals, people or societies will be immune from such changes and that these may very well have far-reaching consequences for the (re)distribution of those things which underpin basic human needs, such as water and food. Thinking through what may happen to various societies as these changes emerge would appear to be a worthwhile and prudent step. The challenge which I rise to herein is trying to think through what this might mean for experiences of crime and criminal justice.

MY OWN EPISTEMOLOGICAL POSITION

I am a sociologist; for me, therefore, crime is a consequential by-product of various aspects of societies, their economies and ways of handling resources and inequalities in access to these (rather than being the result of ‘bad people’, poor thinking styles or other personal deficiencies). It therefore follows that as climate change will affect whole societies and regions of the planet (although with differential impacts one suspects) so climate change will lead to various social and economic changes.⁴ As, from my perspective, crime is a consequence of other social and economic processes, climate change will lead (via social and economic changes) to changes in crime. By ‘changes in crime’ I mean changes in: the amounts of some crimes which occur; the rates with which these are reported, and also the type and nature of such crimes. There are additional consequences, however, since public sensibilities to ‘crime’ and how best to treat ‘criminals’ may also be impacted upon by climate change-induced shifts in opinions and tolerances.

In thinking about the relationship between climate change and crime, there are two routes into the debate. One is to try to calculate the carbon footprint of crime⁵ and the other is to try to imagine what climate change will do to our experiences of crime. These can be thought of as the crime contributes to climate change model (Model A) and the climate change influences crime model (Model B). For my part, I think that trying to calculate the carbon costs of crime (Model A) is rather to miss the point.

⁴ R Leichenko, A Thomas and M Barnes, ‘Vulnerability and Adaptation to Climate Change’ in C Lever-Tracy (ed), *The Routledge Handbook of Climate Change* (London, Routledge, 2010) 135.

⁵ As attempted by G Farrell and K Pease, ‘Climate Change and Crime’ (2010) unpublished paper. Cited with permission of the authors.

Crime ought to be reduced, tackled, punished and so on because it is harmful, rather than because (as a side effect almost) it has a carbon foot print. Moreover, given that climate change is now practically upon us (at the time of writing, Brisbane was being inundated by tropical storms the like of which had not been seen for many decades and some were suggesting that food prices had helped to trigger the unrest in Tunisia and Egypt in early 2011)⁶ we need to turn to what might happen as a result of climate change, not how crime contributes to carbon emission (which is only about one per cent of the entire UK's output anyway).⁷ As such my contribution is to start to think through and imagine the possible ways in which climate change may change some of the basic social and economic configurations of modern societies and how changes in these may alter those behaviours identified and labelled as 'crimes'.

I structure the remainder of this chapter by first assessing what might happen in terms of climate change itself during the remainder of this century. This—as hinted at above—is inevitably going to be sketchy in places, but is nevertheless a logical starting place for such an enquiry. Following this I review some of what might happen generally to societies and economic systems as a result of climate change. This leads us, finally, into a consideration of how these (ie the social and economic changes) will in turn impact on crime.

WHAT IS LIKELY TO HAPPEN TO THE GLOBE AS A RESULT OF CLIMATE CHANGE?

Although it is hard to know exactly what is likely to happen with regards to climate change (due to unforeseen circumstances and the feedback loops inherent in any chaotic system) several 'good guesses' do exist. Amongst the best of these are those developed by the Center for Strategic and International Studies and the Center for New American Security and documented in their jointly published report *The Age of Consequences*.⁸ This report presents three possible scenarios (the Intergovernmental Panel on Climate Change's (IPCC) approved way of thinking about what might happen): an expected one, a severe one and a catastrophic one (all their terms). Let us examine the most favourable of these projections, since it is that which is (arguably) the most likely to come to fruition (the report's

⁶ The Daily Telegraph, 'Egypt and Tunisia Usher in the New Era of Global Food Revolutions' (30 January 2011).

⁷ Farrell and Pease, above n 5, fn 14.

⁸ KM Campbell, J Gullede, JR McNeill, J Podesta, P Ogden, L Fuerth, LJ Woolsey, ATJ Lennon, J Smith, R Weitz and D Mix, *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change* (Washington DC, Center for Strategic and International Studies, 2007).

authors suggest that ‘there is no foreseeable political or technological solution that will enable us to avert many of the climatic impacts projected here’, p55). This scenario predicts an average global temperature rise of just 1.3°C above the 1990 levels by 2040, rising to 2.8°C above 1990 levels by the end of the twenty-first century.⁹ However, while the average increase in temperatures is ‘just’ 1.3°C, this equates to an increase of 2°C over land (where it is generally warmer than over large bodies of water). This is likely to lead to an increase in the levels of glacial ice melt, leading in turn to a rise in sea levels by about a fifth to a quarter of a metre (by 2040). They suggest that:

Global mean sea level increases by 0.23 meters, causing damage to the most vulnerable coastal wetlands with associated negative impacts on local fisheries, seawater intrusion into groundwater supplies in low-lying coastal areas and small islands, and elevated storm surge and tsunami heights, damaging unprotected coastlines. Many of the affected areas have large, vulnerable populations requiring international assistance to cope with or escape the effects of sea level rise. Marine fisheries and agricultural zones shift poleward in response to warming, in some cases moving across international boundaries.¹⁰

And go on to add that:

Regionally, the most significant climate impacts occur in the southwestern United States, Central America, sub-Saharan Africa, the Mediterranean region, the megadeltas of South and East Asia, the tropical Andes, and small tropical islands of the Pacific and Indian Oceans. The largest and most widespread impacts relate to reductions in water availability and increases in the intensity and frequency of extreme weather events. The Mediterranean region, sub-Saharan Africa, northern Mexico, and the southwestern United States experience more frequent and longer-lasting drought and associated extreme heat events, in addition to forest loss from increased insect damage and wildfires. Overall, northern mid-latitudes see a mix of benefits and damages. Benefits include reduced cost of winter heating, decreased mortality and injury from cold exposure, and increased agricultural and forest productivity in wetter regions because of longer growing seasons, CO₂ fertilization, and fewer freezes. Negative consequences include higher cost of summer cooling, more heavy rainfall events, more heat-related death and illness, and more intense storms with associated flooding, wind damage, and loss of life, property, and infrastructure.¹¹

If this all sounds pretty nasty, one has to bear in mind that the next scenario (‘severe’) is premised on the notion that many of the assumptions underlying the IPCC’s report are unduly optimistic (in that they ignore feedback

⁹ However, even these projections may be beyond our reach; see, ‘Worst Ever Climate Emissions Leave Climate on the Brink’ *The Guardian*, 29 May 2011. Alarming news, especially since the global recession was hoped to reduce emissions.

¹⁰ Campbell *et al*, above n 8, 41.

¹¹ Campbell *et al*, above n 8, 41.

processes), and that the average global temperature rise might be nearer to 2.6°C above 1990 levels, and with a sea level rise of 0.52 metres within 30 years from 2007—ie by 2037. Campbell *et al* suggest¹² that the severe scenario will result in the following: reductions in water availability; reductions in crop yields; and lower levels of yields from ocean fisheries. The ‘catastrophic’ scenario (based on a temperature rise of nearly 6°C and two metres of sea-level rise) is truly terrifying. However, being based on the likely situation 100 years hence is probably too far off for any degree of certainty to be attached to it—other than, that is, that the future looks extremely bleak.

Dyer¹³ suggests that the severe scenario is likely to lead to several of the world’s largest cities being inundated due to rising sea-levels and the continual establishment of new ports and abandonment of these as the sea encroaches ever upwards. Crop yields will decline dramatically as usable land is lost to the sea or the costs of irrigating it become too great. Populations which cling to the coasts in some parts of the world will be forced inland or will start to try to move to parts of the world which are less prone to flooding or drought. It is to a consideration of this that I now turn.

HOW WILL THIS START TO IMPACT UPON AND SHAPE OUR SOCIETIES? HOW WILL SUCH RESHAPING AFFECT INDIVIDUAL HUMAN AND SOCIETAL EXPERIENCES? HOW WILL THESE VARY ACROSS COUNTRIES, REGIONS AND BY THOSE KEY SOCIO-DEMOGRAPHIC VARIABLES WE KNOW TO BE ASSOCIATED WITH LIFE CHANGES AND LONG TERM OUTCOMES?

It is to a consideration of this that I now turn. What are the secondary consequences of this for people/populations? What will this do to human societies?

Before we go on to look at what the likely consequences of the above may be for crime, we need to examine what *may* happen to our societies generally, since this will provide us with some clues as to what may happen to crime. Again my focus is largely at the macro-level, focusing on whole systems impacts, rather than the immediate consequences for individuals.

Lever-Tracy,¹⁴ in her own consideration of what climate change may do to the existing varieties of capitalism, suggests that the pressing need to tackle climate change may challenge the basis of our modern economic institutions and those with an interest in maintaining them.¹⁵ The political, economic and social ideologies which foster and which are fostered by current forms of capitalism may face some challenges as a result of some of the

¹² Campbell *et al*, *ibid* 71–74.

¹³ G Dyer, *Climate Wars* (Oxford, Oneworld Publications, 2010) 15–23.

¹⁴ C Lever-Tracy, ‘Alternative Scenarios: Varieties of Capitalism’ in C Lever-Tracy (ed), *The Routledge Handbook of Climate Change and Society* (London, Routledge, 2010) 274–79.

¹⁵ Lever-Tracy, *ibid* 274.

consequences of climate change. Capitalism, however, is likely to endure as a general approach to the economy; the changes in it may, however, bring new winners and new losers, which may bring to the fore a new set of relationships between government and the industrial sectors. For instance, if the ‘small is beautiful, local is best’ ideology firmly takes hold, then small businesses serving local needs may profit, while larger entities may face a withdrawal of public support.

However, the most telling part of Lever-Tracy’s essay concerns human values and how these may be affected by climate change. As she notes, values which emphasise the short term and the immediate may cease to appeal to many people. The emphasis on immediate profits and super-individualisation are relatively recent features of society, and values which promote respect for the environment and a longer term, less individualistic stance may come to the fore. As evidence of this, Lever-Tracy points to the fact that many migrants take jobs in societies which do not value their real skills or qualifications so that their children may have a better life and also that the tsunami of 2004 saw a global outpouring of sympathy and concern for those effected—even though they be socially, culturally and geographically distant strangers. As Tracy-Lever writes ‘values of discipline, solidarity and loyalty to family and community can become elevated over those of individual satisfactions and freedoms’¹⁶ during periods when core social values change dramatically and speedily. These periods of ‘intergenerational cultural landslides’—where the core values of one’s parent’s generation are overturned—may be provoked by dramatic changes (such as climate change).¹⁷ If more and more tightly-focused regulation is required in order for businesses to show that they are complying with any emerging green agenda, so neo-liberalism, which has tended to view regulation with askance, may itself face ideological challenges (see Doran, this collection). Of course, the above reading may prove to be too optimistic; as nations are forced into accepting those fleeing from countries which are no longer viable, so we may witness an increase in the distinctions between ‘them’ and ‘us’, with all of its attendant xenophobia, intolerance and hatred. Such developments, which may be sharply experienced in some locales but not others, may result in the general breakdown of society and/or the creation of two parallel societies—one of ‘pre-mass migration residents’ and one of ‘mass-migrants’.

One of the recent features of international capital has been the tendency for large firms to move capital and resources around the globe relatively easily and with little or no concern for the economic and social impacts of this

¹⁶ Lever-Tracy, *ibid* 276.

¹⁷ Evidence of such value change may be found in the UK in the sudden shift away from the emotional and institutional support for a state-organised economy geared (broadly) towards the production of an egalitarian society and the resulting shift (from the early 1970s) towards desires to ‘own one’s own home’, ‘work for oneself’, ‘get ahead in life’ and the acceptability of income differentials (aka ‘neo-liberalism’).

(witness the opening of overseas call centres, the location of industrial plants in countries with lower staff-costs or weaker health and safety regimes, etc). If, as seems likely, certain parts of the globe start to appear to be geographically or geo-politically insecure, such firms may move capital and resources from such places to safer locales. This ‘migration’ of capital will—again—leave some areas with little or no legitimate forms of employment. Such possibilities make migration—either for economic reasons or for the simple need to find somewhere to live—all the more likely. We might then expect to see a decrease in the population in some areas of the globe and an attendant increase in some other parts of the globe. Campbell *et al* suggest that for Europe

Environmental pressures will accentuate the migration of peoples to levels that effectively change the ethnic signatures of major states and regions. In Europe the influx of illegal immigrants from Northern Africa and other parts of the continent will accelerate and become impossible to stop, except by means approximating blockade. There will be political tipping points marked by the collapse of liberal concepts of openness, in the face of public demands for action to stem the tide. As the pressure increases, efforts to integrate Muslim communities into the European mainstream will collapse and extreme division will become the norm.¹⁸

Accordingly, some communities—the wealthy most obviously—may try to insulate themselves from such ‘invaders’, perhaps consolidating differences between the ‘haves’ and the ‘have-nots’. Citing Leon Fürth, Dyer argues that religious and ideological turmoil will emerge, along with authoritarian political rule.¹⁹ The Campbell *et al* report suggests that some coastal areas of the USA may start to become uninsurable²⁰—along similar lines to the ways in which some parts of New Orleans became uninsurable after Hurricane Katrina in 2005. Increases in the variability of weather systems, and the attendant problems of forecasting ‘weather events’ (such as the storms/floods and bush fires in Europe in the summer of 2007) will certainly pose problems for those estimating insurance risks in the developed world. In light of this and the likelihood of increased rates of loss, insurers may increase premiums for many common forms of insurance. Such policies may result in some people finding themselves uninsurable or needing to pay more for their insurance. This, in turn, may lead to an erosion of confidence in the insurance sector amongst consumers.

In some cases, whole business models may shift away from their present locations. For example, Hanson and colleagues²¹ suggest that increases in droughts, fire risk, water shortages, heat stress, risk of tropical diseases and loss of habitat pose considerable risks for the viability of the current

¹⁸ Campbell *et al*, above n 8, 74.

¹⁹ Dyer, above n 13, 22.

²⁰ Campbell *et al*, above n 8, 72.

²¹ CE Hanson, JP Palutikof, and MTJ Livermore, *et al*, ‘Modelling the Impact of Climate Extremes: An Overview of the MICE Project’ (2007) 81 *Climate Change* 163–77, 174.

Mediterranean tourist industry (which contributes significantly to the economies of Greece, Spain and more recently Portugal²²). Furthermore, they suggest that the above factors, with an attendant increase in the Northern European summers, would lead to a decline in numbers of people wishing to travel to the Mediterranean for holidays.

Climate change looks likely to affect poverty levels,²³ with rural communities and people living in poorer parts of the globe bearing the brunt of these changes. Large-scale reductions in rural wealth, as well as leading to further out-migration, also threatens to damage the sustainability of rural communities in many countries initially affected by climate change (most likely lying on the circumference of the globe). There may be competition between communities over access to vital resources (such as clean drinking water and food—not to mention land itself). Wealthy nations appear already to be purchasing large tracts of land in developing parts of the world (most notably in Africa²⁴) as an insurance against not being able to provide enough for their own citizens from within their own borders.

The costs of providing the food required by some nations may well see increases in price (due to scarcity and increases in transportation costs). Witness attempts by Algeria, Indonesia, Saudi Arabia, Libya and Bangladeshi in early 2011 to buy up surplus grain, even though these were at inflated prices.²⁵ As food prices rise, so some nations may need, at least initially, to contribute towards the costs of food. Social security systems may need, initially at least, to provide food vouchers for more vulnerable members of society, for example. Increased migration may require (at a statutory level) the ‘receiving’ nation to provide housing—again at a cost to the tax payer. If the recent history of migration to many European nations is any indication of what lies in store, migrants can expect to live, in most cases, in the most basic of accommodation and for it to be (or to eventually become) among the least desirable sections of our cities. Such processes of segregation along ethnic and geographic axes will serve only to reinforce the distinctions between the haves and the have-nots, and may lead to further examples of ‘gated communities’ and/or enclaves of the wealthy or the poor. If migration outstrips what many societies can provide easily, then ‘shanty towns’ on the edges of major European cities may become a real possibility.²⁶

²² Tourism represents about 15% of Greece’s GDP, 11% of Spain’s and 5% of Portugal’s.

²³ R Mendelsohn, A Basist, P Kurukulasuriya and A Dinar, ‘Climate and rural income’ (2007) 81 (1) *Climatic Change* 101–18.

²⁴ Dyer, above n 13, 101.

²⁵ The Daily Telegraph, ‘Egypt and Tunisia Usher in the New Era of Global Food Revolutions’ (30 January 2011).

²⁶ The Guardian (16 May 2011, page 21) suggests that the Mongolian capital (Ulan Bator) now has a shanty town of some 700 000 (of a total population of 2.7 m). The existence of this shanty town is attributed to desertification caused by global warming and over grazing of cattle.

Employment may also be hard for migrant groups to attain—again in common with past recent experiences, whereby some migrant groups experience lower rates of engagement in the economy (Bangladeshis in the UK, for example, have some of the highest rates of unemployment). The reasons for this may be many and varied: lack of skills; inability to demonstrate skills to the levels required by western employers; insufficient need for those skills held by migrants and so on. Common employment practices in many developed nations (where pre-employment checks, CVs and skill portfolios are becoming increasingly common for secure employment) may serve only to exclude many from gaining legal work—not to mention language or other, more formal, barriers to employment. Whatever may happen, as increased demands are placed upon European member states and EU-provided services by climate change, so taxation (both of citizens and businesses) may need to be increased in order to pay for such services. Similarly, basic goods and services may also experience dramatic and sustained price inflation as the costs of procuring such goods increase and suppliers pass on costs to the consumer and/or suppliers exploit basic needs (bearing comparison with Thompson's notion of the moral economy). Although no such plans have been unveiled, it may be that access to some goods becomes limited (eg dwindling fish stocks²⁷), either through the operation of normal market practices (ie price inflation) or through direct government intervention in the market place.

Given that access to food, water and basic security is now considered to be a key part of the provisions of the liberal state (even if, of late, some of these services have been contracted out to private companies) their withdrawal or rises in their scarcity and hence costs may trigger something of a crisis of confidence in the state. As Campbell *et al* note:

One way or the other, severe climate change will weaken the capacity of liberal democratic systems to maintain public confidence. This intensified search for spiritual meaning will be all the more poignant under conditions of severe climate change. Governments with resources will be forced to engage in long, nightmarish episodes of triage: deciding what and who can be salvaged from engulfment by a disordered environment. The choices will need to be made primarily among the poorest, not just abroad but at home. We have already previewed the images, in the course of the organizational and spiritual unravelling that was Hurricane Katrina. At progressively more extreme levels, the decisions will be increasingly harsh: morally agonizing to those who must make and execute them—but in the end, morally deadening.²⁸

²⁷ E Stenevik and S Sundby, 'Impacts of Climate Change on Commercial Fish Stocks in Norwegian Waters' (2007) 31 (1) *Marine Policy* 19–31.

²⁸ Campbell *et al*, above n 8, 73.

They also hypothesise what may happen to the *wider* political basis of, in this case, the USA:

The United States' federal system may also experience stress. As noted above, one possible consequence of severe climate change will be greatly increased frequency of region-wide disasters as the result of an increasing number of especially violent storms. At some level, even a well-prepared Federal Emergency Management Agency (FEMA) system might be overwhelmed. As the cumulative magnitude of such damage increases, the federal government would likely leave state governments to shoulder more and more of the burden. The effect would be to strain the ligaments that hold the federal system together.²⁹

They go on to add that 'At some point the government's ability to plan and act proactively will break down because the scale of events begins to overwhelm policies before they can generate appreciable results'.³⁰ Writing about Europe, Campbell *et al* suggest that

At severe levels of climate change, civil disorder may lead to the suspension of normal legal procedures and rights. The precedents for dealing with large, unwanted minorities have already been set in Eurasia under fascism and communism. Under conditions marked by high levels of civil confusion and fear, political leaders and movements will emerge who might not resist these solutions.³¹

These scenarios—all likely within the next 30 years or so—raise a number of pressing and troublesome questions. How will the state respond to threats which are not from other states (aka 'war'), or small groups of people which threaten it (aka 'terrorists') or a larger but more diffuse and socially differentiated group of people for whom it must care and in some way respond to (aka 'the elderly', 'the criminal', 'the unemployed', etc) but from non-human, non-state threats (ie climate change)? These questions—as pressing as they are—are not my concern herein; my focus now is on what the above sorts of impacts on human societies are likely to do to our experiences of crime, policing and security.

HOW WILL THESE SECONDARY CONSEQUENCES FIND EXPRESSION AS CRIME?

It is obvious that climate change will not affect all places in the same ways, at the same time or speed. Most of the materials relating to those regions most likely to be affected first suggest that it is those regions of the world around the equator which will be affected first (in terms of temperature rises, etc) with some parts of the globe initially witnessing only mild rises in temperatures. Asia, Africa and South America are likely to experience these effects

²⁹ Campbell *et al*, above n 8, 73.

³⁰ Campbell *et al*, above n 8, 73.

³¹ Campbell *et al*, above n 8, 74.

first.³² Let us try to think through how the criminological consequences of climate change will play out in something approaching a sequential order.

First, then, let us examine what may happen in those societies *directly affected* by climate change (by which I mean those countries nearest to the equator). Campbell *et al* suggest some very unpleasant outcomes:

Severe climate change will likely be the deathblow for democratic government throughout Latin America, as impoverishment spirals downward. In these circumstances we should expect that populist, Chavez-like governments will proliferate. Some regions will fall entirely and overtly under the control of drug cartels. Some governments will exist only nominally, and large regions will be essentially lawless, much as has been the case in Colombia. The United States will lack adequate means for responding effectively, and will likely fall back on a combination of policies that add up to quarantine.³³

Similarly, British sociologist John Urry suggests that one of the possible long term outcomes for societies is what he refers to as ‘regional war-lordism’,³⁴ characterised by oil and gas wars, the breakdown of systems of communication, a decline in standards of living, the control of recycled weapons and vehicles by feudal chiefs, all with minimal forms of governance or regulation. So, according to Urry and Campbell *et al*, some countries will fall into the hands of violent extremists or organised criminals. But on the way to this, there will be other, perhaps more mundane consequences which are played out in what is, at least initially, a set of circumstances very similar to what exists at present. In short, we will not go from industrialised, ‘minority-world’ societies to *Mad Max*³⁵ overnight.

Large-scale reductions in rural wealth, as well as leading to further immigration will threaten to damage the viability of rural communities and may possibly lead to increases in both unemployment and consequently crime in such communities. As food becomes scarce so there may first be price hikes (leading perhaps to localised riots about food prices, as happened in the UK during the eighteenth century)³⁶ and then larger scale shortages. Such episodes may lead people to turn to illegal markets for basic food stuffs. Undoubtedly such illegal markets will be run by those who will be willing to use threats or actual violence to ensure that they get the price they want for the goods they sell, and who may also be involved in other allied trades (such as the supply of weapons, drugs and the control of prostitution). Perhaps—for all of this remains in the realms of speculation

³² Dyer, above n 13, 4.

³³ Campbell *et al*, above n 8, 73.

³⁴ J Urry, ‘Climate Change, Travel and Complex Futures’ (2008) 59 (2) *British Journal of Sociology* 261–79, 268–69.

³⁵ *Mad Max* (1979); an Australian film directed by George Miller, written by George Miller and Byron Kennedy and starring Mel Gibson, which tells the tale of societal breakdown in a dystopian future in which law and order are minimal.

³⁶ EP Thompson, *Customs in Common* (London, Penguin, 1991) 189.

of course—some of those young men without work in such regions will become involved in these businesses and perhaps there will be competition between rival groupings for the rights to provide services, etc (which may in turn lead to ‘turf wars’). If this sounds overly pessimistic, bear in mind that the ‘migration’ of capital away from insecure regions or countries will leave some areas with little or no legitimate forms of employment. If the situation remains unchecked—and in some cases it might well, as governments discover that there are ‘no go areas’ in some countries for them, or if climate change forces a concentration on other matters (such as negotiations over how and where to evacuate people)—such rivalries may escalate into full-blown wars. Although it would be a gross over-simplification to attribute the war in the Darfur region of Sudan to climate change alone (since other factors were at operation too), the droughts of the 1980–84 seasons certainly played their part in this tragedy. With wars or large-scale on-going turf wars one can expect to see rises in crimes such as illegal arms dealing; rape; torture; murder and other violent crimes. However, many of these activities will—while being crimes—not make their way into courts or to those systems of crime-recording. Few people will attempt to take, for example, providers of illegally-sourced food to court (since they need the illegal markets themselves) and few policing systems will be able to cope with the levels of offending involved during times of extreme distress (in some cases the police may actually be part of a system of corruption anyway). So, we can expect that there will be a lot of crime, but little impact on crime statistics (where these are collated anyway).

Such events, as they escalate, would inevitably lead to the destabilisation of governments. However, even without armed conflict some crimes may become more common; extortion; people smuggling and allied trades may become more frequent. If people regularly go hungry they may take to the streets and forms of protest may become increasingly tense and violent. Again, although not the sole cause of the unrest, inflation in food prices were one of the reasons cited for the protests in Tunisia in late 2010 and early 2011. In the case of Tunisia the protests became so widespread and intense that it led to the collapse of the government. As well as leading to potentially large numbers of displaced peoples, such climatic changes could result in tensions within affected countries leading to secondary waves of war-induced migration.³⁷ And herein lies another lesson; climate change may lie behind some of the popular uprisings of the future, but the role of climate change may be as a *contributing* factor to—rather than a *sole cause of*—any such protests.

Eventually, as has often been the case in the past, refugees will start to leave their once-homelands (either as a direct result of climate change making some

³⁷ N Brenjo, 2007, ‘Looking to Water to Find Peace in Darfur’ in *Reuters Alert*: www.alertnet.org/db/blogs/1265/2007/06/30-100806-1.htm (accessed 15 October 2007).

of their land unviable or as a result of persecution or the fear of persecution). What will happen—in terms of crime—in those countries to which migrants flee? This brings me to what will happen to those countries which are (at least for a short while) likely to be *indirectly* effected by climate change.

Even ignoring, at least for a moment, the impact of migration upon various countries (Europe, North American and the more stable states in Africa, such as South Africa), and to which I shall turn to presently, there are a number of possibly criminogenic consequences of climate change. As noted above, increases in the variability of weather systems, and the attendant problems of forecasting such ‘weather events’ will pose problems for the estimation of insurance risks. Whatever they do, insurers will need to increase at least some premiums.³⁸ If such rises reach a level at which a widespread feeling that insurers are exploiting the situation in order to increase profits, we may see an increase in attempts to defraud insurers.

This may lead to an erosion of confidence in the insurance sector, and lead to widespread mis- or over-claiming amongst consumers. In 2004 Karstedt and Farrall³⁹ asked citizens in England and Wales about the extent to which they trusted their insurers to make them a fair offer during a claim; around 20 per cent said that they did not. They also asked people if they had ever been offered less by their insurer than they felt that were entitled to; 27 per cent said that this had happened to them at least once. When asked if they were worried about being left out of pocket on an insurance claim some 39 per cent said that they were very or fairly worried about this possibility. Five per cent said that they had deliberately cheated on an insurance claim. Imagine what may happen to such figures if insurers start to withdraw coverage from some parts of the country or if they start to raise their premiums. Insurance may seem like an odd service to highlight in a discussion of the consequences of climate change. However, for many people who see themselves as ‘non-criminal’, insurance claims offer one arena in which they could extract (an illegal) profit without feeling that they were offending. As insurers become more picky about who or what they are prepared to cover and how much of an excess they are prepared to request, so insurance clients may seek to gain redress via such scams.

There are also issues as to how climate change might affect our approach to regulation; will there be a continued move away from command-and-control techniques towards more market-oriented mechanisms or, alternatively—once it is found that the latter does not alter personal behaviour sufficiently—will there be a return to more coercive regulatory measures? Along these lines, governments may increasingly become required to monitor and reduce waste products and/or to avoid landfill, with

³⁸ Leichenko *et al.*, above n 4, 143.

³⁹ S Karstedt and S Farrall, ‘The Moral Economy of Everyday Crime: Markets, Consumers and Citizens’ (2006) 46 (6) *British Journal of Criminology* 1011–36.

consequences for environmental law and regulation. This increase in the regulation and surveillance of consumption and waste disposal may again lead to efforts to avoid such regulation and the costs associated with them. Such responses could include activities already deemed to be illegal (eg 'fly-tipping') and activities which are not yet illegal but which could become so as activities become more closely monitored (eg the non-recycling of some household waste items, frequent air travel which is deemed 'unnecessary'). Increasing regulation will lead, inevitably, to breaches of these regulations and backlashes against such regulations (witness the popular backlashes against speed cameras or other traffic calming schemes).

If States require additional revenue in order to assist or regulate their citizenry (either existing or inherited from elsewhere where it is no longer safe or practicable to live) so they may need to raise taxation levels. Since many people may not wish to pay increased rates of taxation, so rates of taxation avoidance may increase as a response. This will have consequences not just for those services provided for by taxation, but will also see increased demands placed upon those who regulate and police taxation systems.

If the Mediterranean tourist industry does start to wane in the light of those factors mentioned above, we may see the development in Northern Europe of leisure centres and resorts based on those, for example, in Malaga or among the Balearic Islands. Such developments, while being good for some of Northern Europe's older seaside resorts which may have fallen out of favour in recent years, may bring with them additional sources of disorder and crime. However, such increases in crime are likely to be localised (along seafronts and associated venues) and seasonal.

THE ISSUE OF IMMIGRATION

Let us now turn to one aspect of climate change which I think may have far-ranging consequences for how many people living in Northern Europe will perceive and think about crime; namely immigration. Increased immigration to Northern Europe is a distinct possibility as some countries in Africa and Asia become climatically less and less habitable. Against the thinking (or ought that to be 'prejudices?') of many right-wing politicians (and even some left-leaning politicians), recent studies of the relationship between immigration and crime have suggested that immigration is associated with *declines* in crime, rather than increases in crime (see for example, Sampson⁴⁰). Of course, there are a number of criticisms which can be levelled at the simple 'immigration reduces crime' argument. First of all the only sustained studies have been conducted in the USA, and other

⁴⁰ RJ Sampson, 'Rethinking Crime and Immigration' (2008) 7 (1) *Contexts* 28–33.

regions may experience things differently.⁴¹ Furthermore, there may be good reasons (such as fear of deportation) which suppress crime rates. Even self-reported studies, however, suggest lower rates of offending among first generation immigrants.

Despite this, while crime may go down, perceptions of disorder and the fear of crime may rise. In his study of Chicago, Sampson found that the concentration of Latinos in a neighbourhood strongly predicted perceptions of disorder regardless of the actual amount of disorder in that neighbourhood (Sampson;⁴² see also Chiricos, Hogan and Gertz⁴³ on perceptions of racial composition of a neighbourhood and levels of reported anxiety about crime). In other words, respondents in Sampson's study simply *assumed* that disorder and the concentration of Latinos were positively related to one another—while in fact this was not the case. Similarly, recent research into punitive attitudes has suggested that the percentage of people of African American descent in a county is a significant predictor of support for capital punishment in the US⁴⁴ whilst areas with large or growing minority populations tend to show growing support for right-wing politicians.⁴⁵ Such findings have fuelled speculation and theorising that the perceptions of a 'group threat' may underlie negative attitudes towards immigrants and in turn stoke punitive sentiments towards such minority groups. What this suggests, if such trends are supported when mass immigration arrives at Europe's door, is that whilst crime may actually go down, anxiety about crime, punitive attitudes and intolerance may all increase. Already one can see the bedrock of such sentiments, although these are sadly a continuing feature of some European countries, in the growing prominence of groups

⁴¹ Papers in a collection edited by M Tonry, *Ethnicity, Crime and Immigration* (London, University of Chicago Press, 1997) reported similar relationships between immigration and crime: HJ Albrecht (Ethnic Minorities, Crime, and Criminal Justice in Germany, 31–99) reported that for Germany offending was not more widespread among migrants than for non-migrant Germans; M Killias (Immigrants, Crime and Criminal Justice in Switzerland, 375–405) reported that for 'many decades, Switzerland experienced lower crimes amongst immigrants than amongst its native population' (402); P Tournier (Nationality, Crime and Criminal Justice in France, 523–51) reported that, although the statistics were in many respects flawed, there were good reasons to suspect that there were few differences in rates of offending between French and non-French residents; while PL Martens (Immigrants, Crime and Criminal Justice in Sweden, 183–255) found that second generation immigrants had similar rates of offending to native Swedes (p240). In general, the evidence tends to support the idea that migrants do not substantially add to national crime rates.

⁴² Sampson, above n 40, 30.

⁴³ T Chiricos, M Hogan and M Gertz, 'Racial Composition of Neighbourhood and Fear of Crime' (1997) 35 (1) *Criminology* 107–31.

⁴⁴ EP Baumer, S Messner and R Rosenfeld, 'Explaining Spatial Variation in Support for Capital Punishment: A Multi-Level Analysis' (2003) 108 *American Journal of Sociology* 844–75.

⁴⁵ MW Giles and MA Buckner, 'David Duke and Black Threat: An Old Hypothesis Revisited' (1993) 55 *Journal of Politics* 702–23.

such as the English Defence League. Recent qualitative research conducted from a psycho-social framework has suggested that

White people's feelings of relative disadvantage led us to conclude that part of the appeal of racism lay in its capacity to act as a receptacle for many unacknowledged emotions: shame about their inability to secure decent lives for themselves and their families; anxieties about ill-health and the risk of criminal victimisation; and humiliation as their investments in the locality [Stoke on Trent, England] were exposed as unsophisticated or imprudent.⁴⁶

As such, the losses (both perceived and real, both subjective and material) experienced by the individuals that Gadd and Dixon spoke to were a key aspect of their attraction to racist discourses (and for some, activities). Reading the above, it is not hard to see how the long term marginalised sections of the White 'working class', given both the past, historic losses (jobs, community, roles) and some of their likely future, climate-change-induced losses may find the overtures stemming from organisations such as the British National Party or the English Defence League hard to resist. This may have further ramifications for both actual assaults on migrants and on the acceptability to others of racially-tinged punitive sentiments.

The impacts of migration at the European end could therefore range from increased community tension, rises in 'people trafficking', a rise in anxiety amongst European citizenry,⁴⁷ which may express itself as 'fear of crime',⁴⁸ eroding trust in the criminal justice system and increasing pressures for punitive sentences, and hence, possibly, rises in rates of imprisonment for crimes relating to trafficking and subsistence (prostitution, drug-importation/selling, etc) to abuses of human rights. If those people fleeing loss of habitat or threat of harm elsewhere are socially and geographically excluded from our towns and cities (either deliberately or because the institutions and organisations of civil society are unable to cope with the levels and speed of arrivals) so we may witness an increase in 'shanty towns' on the edge of European cities (or at key border points). In a European social climate which is increasingly seen to be suffering from clashes between different religious, national and ethnic groups, the steady addition of diverse communities from Asia and Africa could see further strain placed on the already tense issue of multiculturalism versus assimilation in Europe. Will the current levels of human rights protection provided to these different identity groups cope in the new climate?

⁴⁶ D Gadd and B Dixon, *Losing the Race* (London, Karnac, 2011) 12.

⁴⁷ K Norgaard, 'People Want to Protect Themselves a Little Bit: Emotions, Denial and Social Movement Nonparticipation' (2006) 76 (3) *Sociological Inquiry* 372-96.

⁴⁸ S Farrall, J Jackson and E Gray, 2006, 'Everyday Emotion and the Fear of Crime: Preliminary Findings From Experience and Expression', Working Paper No 1, ESRC Grant RES 000231108.

Will public perception exacerbate the problems, leading to restrictive political will to accommodate the human rights concerns of these new communities? Indeed, will all of this lead to a retreat from the willingness to continue to provide rights to existing communities? There may be an increase in racism and xenophobia. Linguistically also, issues arise in relation to the balance to be struck between the provision of minority linguistic rights and the requirement for individuals to participate in the new societies they are joining. All of these concerns are underpinned by sensitivities surrounding the preservation of cultures and identities. As well as increased immigration to Europe, there may well be increased migration within Europe, partly as a 'knock-on' effect, but also as a result of some parts of Europe becoming uninhabitable or less desirable. The incidence of 'people trafficking' is already a high concern for European countries. How will the UK/Europe respond to this? Might this create a further pull in the direction of stringent collaborative action? What are the implications of this for the human rights of those trafficked—many of whom end up working in illegal and poorly regulated sectors of the economy?

Another casualty of the changes likely to be wrought by climate change may be our outlook on the future. It is human nature to want to see improvements in living conditions and lifestyles, both over one's own lifespan and for future generations. This may provoke an attitude shift towards 'greener' values, or, more pessimistically, it may provoke a loss of hope for the future. The ability to hope that 'things will be better in the future' has been linked to changes in attitudes towards crime at the individual level (see Farrall and Calverley)⁴⁹ and can be seen in the work of others such as Green⁵⁰ (in discussing the treatment of child murders) and Karstedt⁵¹ (in discussing wider political cultures and the role these played in the rehabilitation of ex-Nazis) when exploring national-level responses to crime. A decline in levels of hope may bring with it an increase in levels of cynicism and scepticism—neither of which sound good from the point of view of the ideals associated with the rule of law. Finally, some crimes have been demonstrated to be influenced by seasonality/temperature.⁵² As climatic shifts alter local temperatures, so human behaviour will change, with people spending (perhaps) longer away from

⁴⁹ S Farrall and A Calverley, *Understanding Desistance from Crime, Crime and Justice Series*, Chapter 5 (London, Open University Press, 2006).

⁵⁰ D Green, 'Political Culture and Incentives to Penal Populism' in H Kury (ed), *Fear of Crime—Punitivity: New Developments in Theory and Research* (Bochum, Universitätsverlag Brockmeyer, 2008) 251–76.

⁵¹ S Karstedt, 'Life After Punishment for Nazi War Criminals: Reputation, Careers and Normative Climate in Post-War Germany' in S Farrall *et al* (eds), *Escape Routes: Contemporary Perspectives on Life After Punishment* (London, Routledge, 2011) 240–75.

⁵² S Field, *Trends in Crime and Their Interpretation: A Study of Recorded Crime in Post-War England and Wales, Home Office Research Study 119* (London, HMSO, 1990).

their homes (increased risk of burglary?) or (perhaps) more time at home (increased risk of domestic violence?). Field found that ‘good weather’ (ie a lack of rain and the presence of sunshine) was associated with increases in sexual offences, but decreases in non-residential burglary and shop theft.⁵³ Anderson⁵⁴ found that heat increases were associated with increases in violent motivations and behaviours, as did Rotton and Cohn.⁵⁵

However one approaches the issue of crime, given the likely changes in the global climate over the next 30 to 50 years, it is hard not to imagine a situation in which there will be an increased focus on crime (and associated topics such as policing, regulation, justice and hostile sentiments)—even if in some cases crime is suppressed or there are no major increases in crime. Given this, it seems prudent to end this foray into the possible consequences of climate change for crime with a consideration of how well-placed criminology is to deal with these likely changes.

HOW WELL IS CRIMINOLOGY PLACED TO RESPOND TO SUCH EVENTS? WHICH THEORIES MIGHT ASSIST US IN FORECASTING AND PLANNING?

By way of a conclusion I want to spend some time considering how well placed criminology is and criminologists are to assist in what can be called the global ‘coming to terms with’ climate change and what it will entail for our societies and our experiences of crime within those societies. Given the uncertainties I have outlined above, this section is hugely underdeveloped.

There has been little research in the UK, for example on the impact of ethnic minorities on experiences of crime and rates of offending. The evidence that does exist (which is from the US) suggests that ethnic minorities tend to reduce local area crime rates. However, such studies have a number of problems. It is hard to fathom exactly how large number of ethnic minorities suppress crime, and therefore it is hard to know if such a general relationship will hold when one has to migrate whole communities or societies. Perhaps the US has benefitted from selection effects in migration more than we are aware. In any case, the US has traditionally been the melting pot of the world, and strong national values of individualism may act in such a way as to enable the presence of ethnic minority groups to suppress crime. On a related topic, the group threat theory (see Chircos *et al*⁵⁶) provides a way of unpicking some of the sensibilities towards

⁵³ Field, *ibid* 50.

⁵⁴ C Anderson, ‘Heat and Violence’ (2001) 10 (1) *Current Directions in Psychological Science* 33–38.

⁵⁵ J Rotton and E Cohn, ‘Global Warming and US Crime Rates’ (2003) 35 *Environment and Behavior* 802–25.

⁵⁶ Chircos *et al*, above n 43.

ethnic minority groups and how these may unfold over time and are linked to objective changes in levels of migration and so on. However, at present there is no data set on this with a time series component (although such a data set could easily be incorporated into existing surveys—both related to crime and other social issues).

If people's engagement in crime is related to their relationship to key institutions and organisations (see Messner and Rosenfeld, 2001,⁵⁷ Sampson and Laub, 1993)⁵⁸ then, with those societies in possible states of strain (or at very least a state of flux and uncertainty) further work on the impact of climate change on actual offending rates may do well to borrow insights from Institutional Anomie Theory. In *Crime and the American Dream*, Messner and Rosenfeld extended the scope of anomie theory (Merton, 1938),⁵⁹ arguing that all social institutions are affected by structural and cultural imbalances in the economy. From this perspective, institutional anomie arises when the economic sphere is disembedded from other social institutions and when the culture and values of markets dominate other sectors and vital institutions of society, like the family, education and welfare. If the economy is itself likely to undergo dramatic shifts and challenges as a result of some of the consequences of climate change, then we may see a need to continually examine the relationship between shifts in the economic base and the consequences of this for feelings of anomie and attachment to social institutions.

At an individual level, it is likely that future generations of humans (regardless of whether they have had to endure long and pain migrations or have had the relative luxury of remaining in one place) will suffer significant losses. Such losses may be in terms of region and place of residence; homes; possessions; family members; careers; assumptive worlds and future; identities, etc, etc. In this respect, the recent work of Gadd and Dixon (2010)⁶⁰ and of Kauffman (2002)⁶¹ and Farrall (2009)⁶² may provide insights into what we might expect at the individual level. Such losses may, if they become common enough, transcend the individual level and form the basis of social movements (the English Defence League being a regressive example of this, the green movement being a more progressive example)—what these hold for crime itself will vary, of course, but my point is that the

⁵⁷ SF Messner and R Rosenfeld, *Crime and the American Dream*, 3rd edn (London, Wadsworth Publishing, 2001).

⁵⁸ R Sampson and J Laub, *Crime in the Making* (Cambridge, MA, Harvard University Press, 1993).

⁵⁹ RK Merton, 'Social Structure and Anomie' (1938) 3 *American Sociological Review* 672–82.

⁶⁰ Gadd and Dixon, above n 46.

⁶¹ J Kauffman, *Loss of the Assumptive World* (London, Brunner-Routledge, 2002).

⁶² S Farrall, 'We Just Live Day-to-Day: A Case Study of Life After Release Following Wrongful Conviction' in R Lippens and D Crewe (eds), *Existential Criminology* (London, Routledge, 2009) 169–96.

awareness of such losses and the importance of them to our understanding of what these will do to our experiences of crime are ones with which we need to become better acquainted.

CONCLUSIONS

What I have tried to do above is to 'think through' some of what may happen to societies' experiences of crime as the consequences of climate change start to become increasingly apparent and pressing. Doubtless I have missed vital clues as to what may happen, and may have wrongly interpreted some of the clues I have detected. However, what is clear to me is that there is a need for criminologists to start to think about what may happen and how we, as a community of scholars working in what is an essentially empirically-grounded area of research, may best respond to these challenges.

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