

## BSA MEDICAL SOCIOLOGY CONFERENCE PLENARY

### Climate Change and Medical Sociology

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#### Introduction

Humankind faces an environmental problem, in complexity and magnitude, the likes of which have rarely been seen before in human history. In the last few years there has grown to be widespread if not unanimous acceptance that a fundamental global environmental change is occurring, with many effects on society in general as well as human health, especially in the developing world. In a joint statement, the medical journal the Lancet and the University College London Institute for Global Health Commission argued 'Climate change is the biggest global health threat of the 21st century...the effects of climate change on health will affect most populations in the next decades and put the lives and wellbeing of billions of people at increased risk' (Costello, 2009: 373). All academic disciplines are moving to consider the implications of such changes for their areas of expertise.

This paper considers the challenges and opportunities for the specialised field of sociology known in different parts of the world as medical sociology or the sociology of health. Firstly though, there are several riders to be outlined. Firstly, it is hard to separate out distinctively health effects from other effects, and this depends as much as anything on the key sociological issue of how health is defined. Secondly, much of the literature on the health effects is predictive, so far at least, rather than focusing on actual changes. Thirdly, not all the effects of climate change on health are likely to be adverse ones. Some will be positive such as a likely decrease in cold-related morbidity and mortality.

There are five parts to this paper. After a brief consideration of the issues and the predictions, the actual health impacts thus far will be outlined. Then some ideas on the framing and conceptualising of climate change from a sociological point of view will be canvassed before posing something of a research agenda for sociologists becoming interested in this field.

#### The issues

Attempting to summarise the state of knowledge and understanding, there are several points that

can be made. So far there is widespread agreement (if not unanimous consensus) on several key issues. Firstly, the Earth's climate is and will change due to greenhouse gas emissions. Secondly, this climate change on a global scale has happened before but this time is the result of human activity. Thirdly, the main direction of change in global climate is towards warming of the environment. Finally, these changes will have a huge impact on humankind and their health, some of which are already being experienced.

There is disagreement between scientists over what is happening; but not that something significant is happening in the form of a fundamental global environmental change. This is impacting upon both physical and human ecosystems with many likely consequences for humankind in general as well as human health in particular. Furthermore, the weight of evidence is that this change is and will be felt disproportionately in the developing world

Yet reaction to these changes has been slow. The evidence of these far-reaching changes has been accumulating but forms of collective action have been difficult and complex to initiate. In his recent book, Anthony Giddens calls this the 'Giddens Principle':

...since the dangers posed by global warming aren't tangible, or visible in the course of day-to-day life, however awesome they appear, many will sit on their hands and do nothing of a concrete nature about them. Yet waiting till they become visible and acute before being stirred on to action will, by definition, be too late. (Giddens, 2009:2)

An alternative means of understanding this might be called the 'everywhere and nowhere problem'. Climate change discussion fills the airwaves and print media. The likely consequences are much discussed but arguably not much has happened yet in many parts of the world. This is most obviously seen in extreme climatic events where there are inevitable debates about whether each disaster is a 'normal' extreme climatic event or related to climate change.

So climate change represents a fundamental challenge for sociology in general and medical sociology in particular. Sociology came into being at a time of rapid social and economic change associated with the industrial and French revolutions. It appears likely that climate change will also result in fundamental social change. Sociology has a lot to offer in understanding and responding to these issues. As Furze (2008) argues, environmental problems have to be understood as social problems. As sociologists, some things we know and are core to our discipline. An example is that the internal solidarity of a social group is related to the degree of external threat. How can awareness of a major external threat to the whole of humankind in the form of climate change be encouraged such that a movement towards internal solidarity becomes apparent? Can countries act together to reduce carbon emissions and the other forms of mitigation that have been proposed?

### **The predictions for health**

There are two sorts of predictions; indirect and direct effects of climate change on health. With regard to indirect effects, so far, as the debate has unfolded, the main impacts of climate change on health are expected to be political, economic and social upheavals and disruption, with resultant effects on health. But there is little actual empirical research on the indirect link between climate change and health.

In terms of more direct effects, the major work has been done by Tony McMichael and his colleagues at the Australian National University in Canberra who have been writing on this subject for more than a decade. In a recent article, McMichael (2006) argues that direct effects will be concentrated in three areas: thermal stress, extreme weather events, and infectious diseases. They argue that climate change in the form of changes in mean climatic conditions and variability have environmental effects like extreme weather events, sea level rise, ecosystem effects and environmental degradation. Each of these has adverse health effects such as thermal

stress from extreme weather events. Environmental degradation, for instance, is likely to lead to loss of livelihoods, displacement that will lead to poverty and adverse health, especially mental health, as well as infectious diseases, malnutrition and physical risks.

McMichael and colleagues go on to relate environmental and public health concerns generally to responses to climate change. Two main strategies for responding to climate change have emerged; mitigation, which relates to primary prevention (that is stopping it happening or at least getting worse); and adaptation, which they argue is a form of late primary prevention where interventions are made to attempt to reduce or lessen the adverse health effects.

But the difficulty is that there is little impact apparent now. Most of these expected health effects are predicted whereas in being able to understand the phenomenon from a medical sociology standpoint, the need is to analyse the 'here and now'. Furthermore, as McCormack (2008) has argued, while a growing body of epidemiological literature has demonstrated health impacts of climate change, the task is to understand how these illnesses are recognised, who has responsibility to prevent or treat them, and ways in which responsible agencies and institutions shift to accommodate new facts and discourses about climate change .

### **Actual health impacts**

In this section, the concentration is upon the developed world. The argument here is that so far there at least three actual observable impacts of climate change on health. These are heat stress, especially the effects of 'brownouts', on the mental health of those most affected by global warming and the drying of the climate in some parts of the world, and the emergence of new, hitherto unseen, medical conditions; in this case 'bucket back'.

#### **Heat stress**

The clearest direct impact that is already apparent is the effect of heat stress. On this there is plenty of epidemiological evidence (e.g Parry et al, 2007). The European heat wave of 2003 is estimated to have killed more than 30,000 people, the UK's record temperature topping 100F for the first time in that year. Here it is clear the elderly are most affected. For the most part, susceptibility to the adverse effects of climate change is class-related. In the same way that wealthier residents of New Orleans were able to jump in their SUV's and escape the floods of 2005, leaving the poor to suffer the full effects, so with heat stress. As global warming occurs, we become more dependent on artificially cooling our own personal living conditions. Yet the availability of air-conditioning is related to affordability. As Klinenberg (2002) found in his study of the Chicago heatwave of 1995, most deaths from heat stress occurred amongst the poor, many of whom were elderly.

Yet as residents of the Australian state of Victoria found in the 2008-09 summer that resulted in massive firestorms and the major loss of life; the levelling factor that affected everyone was 'brownouts'. When the demand for electricity to run air-conditioning exceeds the supply, raising the potential of overload, equipment failures and blackouts, the electrical authorities instituted a series of planned 'brownouts' where areas were rotated to have no electricity (for several hours at a time), in order to reduce the level of demand to match the level of supply.

#### **Mental health**

For those countries which are experiencing a gradual drying of their climate such as South Eastern Australia, the impact on the mental health of those most affected is already apparent. South Eastern Australia is now entering its 13th year of drought, with the drought causing 'El Niño' climatic effects predicted for the summer of 2009-2010. In this sense the change on climatic conditions can no longer really be called a drought in the sense of an abnormal event.

Instead it is coming to be called the drying of the climate.

What is the impact on those most affected, in particular, farmers? In one study Miller and Burns (2008) used data from the Australian Bureau of Statistics to conduct a retrospective audit review of the files of 1033 suicides that occurred between 1997 and 2001. The average annual farm suicide rate was found to be 33.8 per 100,000 for men, 6.7 per 100,000 for women and 21.6 per 100,000 for all persons. This was much higher than the rural suicide rate for South Australia in 2001 (23.8 per 100,000 for men, 5.6 per 100,000 for women and 14.5 per 100,000 for all persons). So in the driest state on the driest continent, this rate is significantly higher than the overall rate of suicide.

The emergence of new medical conditions

McMichael and his colleagues (2003) predict the spread of tropical diseases away from tropical regions both northwards and southwards from the equator. Amongst these the spread of dengue fever is already apparent in Eastern Australia. Adaptation responses by people seem to be exacerbating this trend. The trend towards rain harvesting tanks being installed in many domestic houses creates the possibility of open water surfaces in which mosquitoes carrying dengue fever might breed.

Other health conditions are also apparent. An example is the phenomenon of 'bucket back'; the incidence being greatest amongst the elderly and amongst women. As water restrictions, especially those involving watering of gardens, tighten; alternative means of trying to save wilting gardens have become apparent. These are features of the shift towards the conservation and recycling of water. So part of the changes in the use and reuse of water, especially in societies with severe restrictions in the use of water, has been collecting shower or bath water and reusing it either to flush toilets or wash clothes, or indeed to carry out in buckets to try to keep precious plants alive. Concern about bucket back led a spokesperson from the Australian Chiropractors Association (Dr Sim) to issue a press release in 2007, stating that:

..the potential risk of bucket back can be greatly reduced by following some simple tips when out in the garden: Bend your knees when lifting buckets; never bend your back; only carry what is absolutely necessary – do not overfill your bucket; and use two smaller buckets (one in each hand) to disperse weight evenly.

### **Framing and conceptualising climate change**

How can climate change be studied from the sociological perspective and what conceptual and theoretical tools do we have at our disposal from within our discipline?

In general, firstly, is the standard sociological question that occupies the first lesson of every medical sociology subject. How is health to be defined; and what then is illness? Arguably the challenge of climate change requires us to move beyond standard WHO-type definitions to return to some of the classical insights of early medical sociology, especially the work of Dubos (1987). He conceptualised health as a state of balance with the natural environment; what he called an ecological approach to health. This theme has been taken up more generally by McMichael,(2003:1-3), who argues:

The long-term good health of populations depends on the continued stability and functioning of the biosphere's ecological and physical systems, often referred to as life-support systems. We ignore this long-established historical truth at our peril: yet it is all too easy to overlook this dependency, particularly at a time when the human species is becoming increasingly urbanised and distanced from these natural systems.... Appreciation of this scale and type of influence on human health entails an ecological perspective. This perspective recognises that the foundations of

long term good health in populations reside in the continued stability and functioning of the biosphere's life-supporting ecological and physical systems.

Social scientists in general and sociologists in particular have been slow to come to the study of climate change. Only very recently has there begun to appear a specific social science literature such as the anthropologically-oriented contribution by Baer and Singer (2009). Constance Lever Tracey (2009) attributes this 'strange silence' in mainstream sociology to an uneasy tension in the epistemological basis of environmental sociology between and realism:

....most sociologists, outside the specialism of environmental sociology, have had surprisingly little to say about the possible future social trajectories they may portend. Wary of accepting the truth claims of natural science, but aware of our own inability to judge the validity of their claims, we have generally preferred to look the other way, although these developments can affect the very core of our discipline's concerns. (Lever Tracey, 2009:445)

In a recent paper Steve Yearly (2009) argues cogently for the 'constructedness' of climate change: indeed that this insight is a contribution social scientists can make to the debates. All the models that are being used in the debates around climate change are socially constructed – for three reasons. Firstly, they are constructed in the sense that they are based on projections about the future behaviour of an enormously complex system about which, everyone agrees, there is imperfect knowledge. By their nature, such models cannot be tested against the future since we cannot wait for the future to arrive before making decisions about whether today's models are right. Nor can they really be adequately tested against data about past climates since they are constructed precisely in the light of information about the past and thus are more likely to be accurate under past circumstances than unprecedented new ones. Accordingly, the models are inevitably to some extent conjectural.

Secondly, they depend on assumptions about what people and governments, corporations and householders will do. Just as climate models require simplified versions of the atmosphere and the oceans, climate projections demand simplified versions of societal activity. The key point here is that people's behaviour is by no means fully separable from the business of modelling. Social choices affect climate futures in complicated ways. This second aspect of construction has an additional level of complexity since the behaviours of governments, consumers and other actors will be affected by the various climate change projections produced (by the IPCC, climate sceptics, pressure groups and others) and how well publicised and persuasive the experts' views are. For this reason, the futures produced by the IPCC and other modellers are not to be regarded as forecasts of what will happen (in the way that an ordinary weather forecast is an estimate of what tomorrow's weather *will* be). They are consciously offered as estimates of what would be expected to happen given certain circumstances. Most importantly, if governments, corporations and consumers pay attention to those calculations, then the circumstances will change and the 'forecast future' will never come.

Thirdly, the design and constitution of the institutions within which the projections are developed are legitimately generated. Models in this area are not produced by lone academics; modelling capacity is highly expensive and projections are produced in relatively small numbers in a few centres worldwide. The results are agreed through an elaborate process of negotiation within the IPCC and, though academics may write up their results in numerous journals and other outlets, the most mainstream publications are the IPCC reports. These result from a hybrid process of scientific discussion and diplomatic negotiation where country representatives have a large say in writing chapter summaries. Given the interests at stake and the importance of trying to achieve an international consensus, this is no doubt sensible. However, it does mean that who gets to write the results, what is presented and how they are summarised are all things regulated in a different way from the standard academic model. The fact that climate science and

authoritative climate projections have come to be organised in this way is itself an element of its construction – a construction at the level of the sociology of the scientific community (Yearly 2009: 390-392).

As sociologists we know that the framing of ill health is a part of its social construction. As Lantz and Booth (1998), for instance, have argued; this both reflects and guides the determination of responsibility for etiology, treatment, and prevention. So how are the health effects of climate change being framed? Furthermore, the likely health consequences of climate change, and the risks to human health therein, we understand not as somehow reflections of objective reality but, as Douglas and Waldavsky (1983) have argued, rather as cultural phenomena that reflect societal and group values and that must be interpreted in the light of their broader cultural functions.

So when we as sociologists turn our attention to the health effects of climate change, what conceptual tools are at our disposal? The perhaps hegemonic tool is that of risk; an approach well established in the discipline and arising out of the prolific and sustained work of Ulrich Beck (1992, 1995, 2008). For Beck, climate change is part of a risk society, a theme also taken up in the recent book by Giddens (2009).

Yet important though the concept of risk is, it may be that other concepts need to be added to make better sociological sense of the health effects of climate change. In particular the somewhat embryonic observation being made in this paper (and on which further explication is needed) is that the concept of vulnerability may be as, if not more, useful in this task. So we can ask, in the specific instance of human health, which groups are more vulnerable than others?

For Giddens (2009: 213), the answer to this question is clear: ‘the bottom billion’ inhabitants of the planet. Vulnerability indeed follows the familiar contours of social inequality that sociologists have studied for decades. Most of the ‘bottom billion’, whose health is likely to be most affected, live in the developing world. Already there are ‘climate change refugees’ as rising sea levels take their toll on low lying Pacific Islands.

In the developed world, we can predict that the health effects of climate change will be experienced disproportionately according to the dimensions of social inequality with which we are all familiar; by class (brownouts notwithstanding), gender, age (where the elderly are most vulnerable) and ethnicity (where the indigenous inhabitants appear to be the most vulnerable).

The relationship between vulnerability and risk has been addressed by Sarewitz and colleagues (Sarewitz et al. 2003: 809- 10). They argue that:

...the relation is not commutative: reduced vulnerability always means reduced outcome risk, but reducing the outcome risk does not always reduce vulnerability. This irony ought to create a policy incentive to focus on vulnerability reduction, since it leverages more than outcome risk reduction. But, as the case of climate change demonstrates all too clearly, when thinking about the future, risk turns more heads and grabs more headlines than vulnerability. Effective planning for and response to hazards and other extreme events requires that the vulnerability associated with specific social and decision processes be understood in parallel with understandings of processes and probabilities of risk, so that judgments can be made about the appropriate balance between risk- and vulnerability-based approaches to management. A myopic focus on risk to the exclusion of vulnerability can easily enhance rather than reduce the prospects for negative outcomes.

So vulnerability may be a better means of understanding and analysing the consequences of climate change (especially damage to health), related as they are to social inequality and resilience. So while more work at the conceptual level needs to be done, it may be that the concept of vulnerability may be more capable of relating agency to structure than the concept of risk does.

In terms of framing and conceptualising the sociological issues surrounding climate change, we also need to be ready to use our sociological imagination to critique more individualist modes of framing. An example is with the concept of ‘resilience’. Whilst it is not irrelevant to debates

over climate change; there is a need at a societal and global level to increase resilience, we should learn from our studies in other fields of the problems created when the concept is applied at an individual level. An example is studies in the field of occupational health and safety. Focusing on individual adaption to dangerous work situations (ear muffs), rather than the source of the problem (installing quieter machines) can be summed up with the saying ‘fix the worker not the workplace’ (see Quinlan and Bohle, 1991; Willis, 1986). Consistent with the neoconservative/neoliberal ideology that dominates debates at the level of political economy; such an approach promotes individual adaptation to adverse situations, rather than dealing more structurally with the situation at the source. Adaptation is a necessary strategy but not so much at an individual level (‘learning to like hotter temperatures?’). So a structural sensibility, arguably one of the hallmarks of a sociological analysis (see Willis, 2004), would focus on mitigation at one level but also adaptation at a more societal level. With regard to health, such an approach is a tricky one in the context of the dominant discourse of individualism and indeed the huge focus research-wise (including dollars) on the genetic causation of disease (e.g breast cancer). Indeed it is tempting to predict the discovery of a gene for adapting to climate change! Instead the aim needs to be to find collectivist solutions that do not increase inequality and poverty.

In their recent book, Baer and Singer (2009) argue for a return to a more ecological approach to health; but in this case a critical social ecology. They outline the systematic structures of inequality that underlie climate change and propose the concept of ‘ecosyndemics’ as a new paradigm for understanding the relationship between environmental change and disease. They argue:

.... health is fundamentally rooted in sociocultural and political-economic systems, and thus intertwined with the world system and with anthropogenic climate change. (Baer and Singer.2009:7-8)

## **A research agenda**

How might sociologists contribute to the debates? What advice about possible topics might be given to eager postgraduate students keen to ‘make a difference’ and embark on a topic in this field? A number of possibilities are suggested below; a list that is by no means exhaustive.

### **The sociology of scientific knowledge**

One obvious topic worthy of further study is the sociology of scientific knowledge, especially surrounding the opposition to the idea of a human link to climate change; the sceptics, agnostics and deniers. By what social processes is this declining over time? What seem to be the key issues in people changing their minds? Further than that though, studies have shown how funding and lobbying by vested interests, especially manufacturers, in other areas have served to render the scientific evidence controversial, contestable and therefore an impediment to action (legislative and otherwise). Tobacco (see Chapman, 2007) and asbestos (see McCullough and Tweedale, 2008) are two examples. To the extent that evidence is available, how have the climate change sceptics’ campaign been supported and funded? What has been the role of right wing ‘think tanks’ (especially in the US under the Reagan/Bush administrations)? How have fossil fuel polluters’ interests and lobbying affected the political process of formulating a response to climate change?

### **The social anatomy of climate related disasters**

Klinenberg’s (2002) classic study of the 1995 Chicago heat wave showed how social isolation of elderly minorities in crime-ridden areas with poorly ventilated housing and inadequate social services, as well as an uncoordinated response among health, fire, and police departments, were

interacting factors that caused the disproportionate number of deaths. Many of the victims of the 1995 heat wave left no family or were indigent. Of the 68 unclaimed bodies, 41 died of heat-related causes.

Another study, this time in the developing world, is the analysis by Cannon (2002) of the floods in Bangladesh in 1997-8. His particular focus is upon gendered effects and the ways in which social structural factors resulted in a much higher mortality rate amongst women than amongst men. Amongst the factors he found that led to this were: the women wearing bulky clothing that made it harder to swim; not many women having been taught to swim; as well as the requirement that women only leave their houses in the company of men, so that many perished waiting for their men folk to take them to safety.

Certainly, now that almost a year has passed, a social anatomy of the 2009 Victorian bushfires would constitute an ideal topic for sociological research. This was the largest natural disaster in Australian history with 173 deaths, 500 injured, more than 400 individual fires and 2,200 houses destroyed. The focus could be, in classic sociological style, to relate the personal troubles to the sort of public issues of a social and structural kind (analysing the lead up and the events themselves as well as the response) that the ongoing Royal Commission in Melbourne is uncovering day by day in their hearings.

#### State responses to climate change

How has the state responded to the threat of adverse health effects of climate change? What adaptive strategies have been developed that are conducive to health? Giddens (2009:69) argues for the ensuring and enabling state whose 'prime role today is to help energise a diversity of groups to reach solutions to collective problems... the state is responsible for monitoring public goals and for trying to make sure they are realised in a visible and acceptable fashion'.

#### Gender and climate change

How does the experience of climate change differ by gender? We have already seen the Cannon example in the developing world. In the developed world, a potential area of study is the role and indeed importance of gardens, especially to older women, and the impact on them of the drying climate. While we are not quite at the stage of 'learning to love cactus' in many parts of the developed world, nonetheless the importance of keeping gardens alive and adapting to a drying climate in the era of (often severe) water restrictions can be seen in the emergence of 'bucket back'.

In relation to masculinity, what has been the impact of climate change on the social construction of masculinity for those men whose lives are significantly affected; such as the South Australian farmers referred to earlier? (see Alston and Kent, 2008). To what extent is what Campbell et al. (2006: 9) call 'the hypermasculine swagger of rural masculinity' acting as an impediment to men seeking assistance. Such normative masculinity socially constructs help-seeking as a sign of weakness (see Connell, 1995). As they argue:

The dominant masculinity in rural areas is so normalised it is usually invisible, and all other positions relate to this norm. This position has given many rural men influence in rural communities and agriculture, allowing them to receive benefits in terms of status, wealth and political power. While this hegemonic position has benefited men in good times, it also locks them into fairly rigid subject positions, typified by a stoic resistance to adversity and a rugged individualism that prevents help-seeking behaviour. The very stoicism that is its hallmark tends to prevent men addressing their health needs. (Campbell et al: 2006:9)

## The Cultural aspects of Climate change

The final area for research, as Douglas and Waldavsky (1983) alert us, is the cultural dimension of climate change. The major change here would seem to be the much greater cultural valuing of water and the beginning of an understanding of its relationship to health where, in many parts of the world, water is and has come to be regarded as a scarce commodity and precious resource. The cultural change is to two-fold. Firstly, there is the recognition of the need to minimise its use through water restrictions, dual flush toilets, water efficient shower heads and personal hygiene practices (e.g. tap off while brushing teeth) waterless public urinals and composting toilets. In Victorian schools the adage for children in relation to toilet flushing is 'if it's yellow let it mellow; if it's brown flush it down'!

The second aspect of the cultural change relating to water-use is the shift towards the recycling and reuse of water; separation into grey water that can be used again and black water that cannot. Attempts to introduce a portion of recycled water into domestic water supplies (as happens in many parts of the world) are perhaps slower to be accepted. In 2006, the residents of the Queensland regional city of Toowoomba rejected a plan to introduce a portion of recycled water into the town supply with a vote of 62% against.

## Conclusion

Sociology as a discipline came into being as a response to rapid social change, associated with intellectuals of the day trying to 'make sense' of the nineteenth century revolutions. Enough is known about the likely impact of broad climate change related social changes on how people live their lives and that these social changes will have both direct and indirect effects on health. Many of these effects will be identified and analysed by epidemiologists. The sociological contribution will be to develop and extend the analysis of these effects, most especially perhaps at a qualitative level, where the focus should be on understanding the implications of climate change for health.

There are many opportunities for social scientists and sociologists in general and health sociologists in particular to make significant contribution to understanding the climate change related processes of adaptation and mitigation. As Giddens (1983) has argued, sociology is the study of 'alternative futures'; not only of what is but what might be.

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