THE FUTURE OF GREEN CRIMINOLOGY:

HORIZON SCANNING AND CLIMATE CHANGE

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INTRODUCTION

This paper is written alongside and in conjunction with two other papers presented at the 'Green Criminology' Presidential Panel of the American Society of Criminology conference held in Atlanta, Georgia in November 2013. The first of these papers explored the origins and early development of green criminology as an identifiable paradigm or perspective. The second delved into the question of species justice and the challenges of such analysis for criminological considerations. The aim of this paper is to sketch out the future of green criminology, by focussing primarily upon the importance of engagement in research and action around issues pertaining to climate change. Before doing so, it is useful to briefly reconsider the key elements of green criminology as a form of intellectual intervention.

GREEN CRIMINOLOGY: PRESENT AND FUTURE

The kinds of harms and crimes studied within green criminology include illegal trade in endangered species such as exotic birds or the killing of elephants and rhinos for their ivory tusks, illegal harvesting of 'natural resources' such as illicit fishing and logging, and prohibited or irresponsible disposal of toxic substances and the resultant pollution of air, land and water. Wider definitions of environmental harm and crime extend the scope of analysis to consider activities such as the legal clearfelling of old growth forests and the negative ecological consequences of new technologies such as use of genetically modified organisms in agriculture (e.g., reduction of biodiversity through extensive planting of GMO corn). More recent considerations include the criminological aspects of climate change, from the point of view of human contributions to global warming (e.g., carbon emissions from coal-fired power plants) and the criminality associated with the aftermath of natural disasters (e.g.,

incidents of theft and rape in the wake of Hurricane Katrina in New Orleans). Green criminology thus provides analysis and interpretation of a wide spectrum of social and ecological issues (see White & Heckenberg, 2014; South & Brisman, 2013).

The expansion of green criminology as a discreet body of work involving particular academics and practitioner networks is, ironically, based upon the notion of particularity – that is, that there is something unique and distinctive about this activity called 'green criminology' that sets it apart from other types of social scientific investigation (Lynch, 1990; South, 1998). Conversely, the embrace of climate change (Agnew, 2011, 2012, 2013) and illegal wildlife trade (Lemieux and Clarke, 2009; Pires and Clarke, 2012; Schneider, 2012) by those working within mainstream criminological circles represents a move toward inclusivity – that is, the field of criminology is sufficiently elastic to allow the incorporation of the study of environmental harm and crime more deeply into its conceptual and methodological universe.

The benefit of labelling this type of scholarly activity as 'green criminology' is that it has provided a focal point for people around the world who share a passionate interest in analysis of, and action around, environmental crimes and harms. This has been important in terms of building networks of scholars and researchers, and has led to an increasing number and variety of public forums where environmental crime is discussed and debated from diverse perspectives. While not precluding individuals working on their own or in isolation from others, the sense of collective mission has been important in consolidating this area of work, in raising its status and profile within mainstream academic bodies and governmental organisations, and in engendering new conceptualisations and methodologies. The enhanced circulation and cross-fertilisation of ideas and knowledge has been largely beneficial to all

concerned. What unifies the diverse approaches under the green criminology umbrella is a concern with the environment informed by the pursuit of justice, whether this is legal, social or ecological.

Green criminology has many different substantive contributions and theoretical dimensions. Debates will continue over how best to define concepts such as harm, crime and victim; over the moral calculus that weighs up the interests and rights of humans, eco-systems and animals; and over which interventions will achieve what kinds of intended and unintended outcomes. Dialogue around these issues will ensure lively and healthy deliberations over environmental matters now and into the future.

Two key drivers are propelling interest in this area. The first is the nature of environmental problems and impending crisis itself. The degradation and destruction of specific environments and extinction of species is having a manifestly negative impact across the globe. It cannot be ignored. Likewise, climate change is rapidly and radically altering the social and ecological landscape in ways that warrant immediate and urgent attention from criminologists. The problems we are causing for the natural world of which humans are a part, demand solutions and criminology can and must contribute to this process.

Secondly, as mentioned, there is increasing awareness of interesting overlaps and synergies between green criminology and other areas of criminology. The latter include mainstream or conventional areas, for example, situational crime prevention and general strain theory (Wellsmith, 2010; Agnew, 2013). It also includes novel and more recent areas of concern, such as cultural criminology (Brisman and South, 2012; Ferrell, 2013). Heightened

interaction across conceptual domains is generating increasing interest in and excitement over a green criminology that looks to the future as well as drawing upon the past.

In response to growing discontent about the state of the environment a distinctive, critical 'green criminology' has emerged in recent years that takes its focus from issues relating to the environment (in the widest sense possible) and social harm (as defined in ecological as well as strictly legal terms). Much of this work has been directed at exposing different instances of substantive environmental injustice and ecological injustice. It has also involved critique of the actions of nation-states and transnational capitalism for fostering particular types of harm, and for failing to adequately address or regulate harmful activity. Given the pressing nature of many environmental issues it is not surprising that criminologists around the world are now seeing environmental crime and environmental victimisation as areas for concerted analytical and practical attention.

HORIZON ISSUES AND LOOKING AHEAD

Green criminology is diverse and diffuse in terms of topics, methods and approaches. As an innovative and evolving field of research and action, it will continue to change and evolve as circumstances dictate. This section considers three areas that are likely to receive increasing attention as we look to the future of green criminology: the heuristic value of environmental horizon scanning; the realities of climate change; and the concept of ecocide.

The field of green criminology has grown rapidly in recent years in response to deteriorating environmental conditions. The demise of plant and animal species through both legal and illegal means, the growth in human populations, and the shrinking of natural resources (such

as drinking water) and non-renewable resources (such as oil and gas), all add up to enormous pressures on the environment generally. With biodiversity under threat, global resilience to the impacts of climate change is thereby reduced. Yet, the commodification of nature ensures that economic value is, ironically, best realised in conditions of advancing scarcity. For some, environmental degradation and destruction is profitable.

Climate change, in particular, is set to fundamentally transform the present world. The impact of global warming is already being felt, and the Earth's temperature continues to rise and this will generate increasingly profound shifts in weather conditions and climatic events. While there is a tendency to attribute extreme weather-related events to a 'once in a hundred years' experience, the devastation wrought by superstorms like 'Sally' along the eastern seaboard of the United States in October 2012 was not simply a one-off phenomenon; it marks part of the beginning of regular chaotic events, the predicted result of anthropogenic contributions to greenhouse gas emissions.

Simultaneously, the global pursuit of a Western consumer lifestyle daily adds to the pollution of air, water and land. Factories belch out smoke, as do cars, buses and trucks designed to transport people and goods. The rapid obsolescence of electronic goods not only contributes to the growing waste problem but also fuels the illegal transference of electronic waste. Vast areas of the planet continue to suffer de-forestation in the global scramble for new mega-mines, for coal-seam gas, for land for GMO 'flex' crops, and pastures for cattle and sheep. Changing land uses are creating new toxic towns; at the same time new forms of recycling of ships and electronic products are producing contaminated communities. And the planet continues to heat up.

There is, then, a certain urgency and necessity for action around environmental issues, and criminology can play a role. The present global treadmill of production is based upon two major activities: exploitation and depletion of natural resources (e.g., via the extraction industries); and pollution and degradation (which provide toxic additions). These withdrawals and additions are killing the planet (Stretesky, Long and Lynch, 2014).

HORIZON SCANNING

From the perspective of horizon scanning, the focus of analysis is on current developments pertaining to the environment, and extrapolating from these any potential harms and transgressions that may be problematic in the future.

The use and need for horizon scanning as an intellectual exercise and planning tool is related to the idea that many threats and opportunities are presently poorly recognised. Accordingly, a more systematic approach to identification and solution of issues is required rather than reliance upon ad hoc or reactive approaches. For example, Sutherland et al. (2009: 1) point out that 'the need for horizon scanning of environmental issues is illustrated by the recent failure to foresee both the widespread adoption of the range of biofuels currently in use, and the environmental consequences of biofuels production'. Horizon scanning can provide insight into risks (potential problems) and harms (actual problems). Coupled with concepts such as paradoxical harm (that refers to apparently contradictory yet consciously chosen forms of harm), and the mobility of harm (transference), horizon scanning provides a mechanism to discern where emerging threats (and positive opportunities) may arise and potential strategies for mitigating or adapting to these.

Looking over the horizon has two meanings that are worth exploring. The first meaning relates to geographical scope – as in looking beyond our own borders. The second refers to temporal considerations – as in looking to the future and beyond. We begin with geographical notions of going beyond our own borders.

Locality is important when it comes to studying environmental crimes and harms. Around the world different countries tend to have different types of environmental problems and issues. In New Zealand, for example, big questions have arisen over the use of pesticides and over-use of land for agriculture and pastoral purposes. Land and water is being contaminated through existing systems of production. By contrast, pressing issues of concern in Canada relate to the ecological impact of the huge oil tar sands projects in Alberta, and to the impact of insect blights on the pine trees of British Columbia. In the UK, following repeated flooding, questions are being asked about the wisdom of land subsidy grants that have led to the 'enforced mass clearance of vegetation from the hills' hence decreasing landscape features that would absorb water (Monbiot, 2014). National context is important in both the objective nature of the problems at hand (e.g., pollution, deforestation, lack of adequate water or too much water causing floods), and in regards to subjective processes relating to the politicisation of issues (e.g., the role of social movements in shaping public consciousness and state action on specific issues).

Most countries of the world have borders with another country. Rivers flow, mountains soar, air currents weave their way through the atmosphere, and plants and animals cross artificial boundaries that, for them, do not exist. There are issues that are specific to particular regions of the world. Huge tropical forests are found in the Amazon, an area that encompasses several different countries such as Brazil and Colombia. Such forests also cover parts of

South-East Asia, spanning Indonesia, Malaysia, Thailand and Burma, among other regions and nations. Africa is home to elephants, reptiles, giraffes and other species, unique to particular parts of that continent, and not the preserve of any one country. Desertification and drought are phenomena associated with the dry lands of Northern Africa and the island continent of Australia. Meanwhile, cross-border pollution in Europe, and between China and Russia, are matters that demand a regional rather than simply national response. Acid rain traverses provincial and state demarcations and can affect environments, animals and humans many kilometres away. A nuclear accident in the Ukraine makes its presence felt in Britain, as well as the immediate vicinity of Chernobyl. Radioactivity stemming from the nuclear meltdown in Japan moves around the globe via ocean and air currents.

The opportunities for certain types of crime are influenced by very specific local and regional factors. For example, the penetration and dominance of the Mafia in the waste disposal industry in Italy provides a unique but devastating illustration of national difference (compared to countries where organised crime is not involved in this industry) that has an international impact (through dumping of toxic waste in international waters) (Walters, 2013). In central and western Africa, the global bush meat trade is driven by several different factors with dire consequences for apes, chimpanzees, gorillas and other primates especially, which are threatened with extinction. Local habitats for these animals are also being lost through logging, mining and other commercial developments. Not only are adult primates being killed for food and body parts, but orphaned primates are being sold on the exotic pet market, further contributing to the degradation of these species.

Specific places demand specific analysis, yet both place and analysis can be linked to considerations that are universal in their relevance and application. For instance, transnational

environmental harm is always located somewhere. That is, while risk and harm can be analysed in terms of movements and transference from one place to another, it is nonetheless imperative that threats to the environment be situated in specific regional and national contexts. This is important for several reasons. First, environmental threats originate in particular factories, farms, firms, industries and localities. Second, the political and policy context within which threats to the environment emerge is shaped by the nature of and interplay between local, national, regional and international laws and conventions. What happens at the local and regional level counts – whether we are referring to the Nordic countries, those of South Eastern Europe, Australasia or Latin America.

The study of transnational crime involves different approaches that have various names such as comparative criminology or transnational criminology (see Friedrichs, 2007). What recent global study has demonstrated is that methodologically it is essential to have both a sense of history and a sense of place in the study of the phenomenon at hand. It is through global, comparative and historical analyses that the differences, similarities and paradoxes in environmental crimes are illuminated. The same applies to differences in the study of, and state and civil society responses to, environmental harm. Pursuing analyses through all three dimensions is one of the key challenges for green criminology as it further develops.

Turning our attention to its temporal meaning, the use and need for horizon scanning as an intellectual exercise and planning tool is related to the idea that many threats and opportunities are presently poorly recognised. Horizon scanning can provide insight into risks (potential problems) and harms (actual problems). It provides a mechanism to discern where emerging threats (and positive opportunities) may arise and potential ways to mitigate or adapt to these.

In analysis of horizon issues a variety of concepts might be deployed. Certainly matters of time, space and scale are relevant. For example, risks and harms may be direct or indirect, and their consequences may be felt in the immediate or in the long-term. Harm may be specific to local areas (such as threats to certain species, like coral in the Great Barrier Reef) yet manifest as part of a general global pattern (such as being an effect of wide scale temperature changes affecting coral everywhere). Harm is central but this may be non-intentional (in the sense of being a by-product of some other agenda) or premeditated (insofar as the negative outcome, for some, is foreseen). The demise of the polar bear due to the impact of global warming in the Arctic is an example of the former. The displacement of local inhabitants from their land due to carbon sequestration schemes is an example of the latter.

Several other concepts are particularly relevant to horizon scanning. Some of these look to the future, such as intergenerational equity, the precautionary principle, and transference over time, as a means to frame potentials and possibilities (see Brown Weiss, 1992, 2008). Assessing present developments in terms of future impacts also requires addressing matters of justice, past, present and future. Notions of environmental justice, ecological justice and species justice are especially relevant in this regard (see White, 2011). Collectively these concepts provide a values framework for assessing risks and harms as part of the exercise of looking over the horizon (see Box 1).

Box 1:

The Conceptual Framework for Environmental Horizon Scanning

Substantive Orientation

Risk – a prediction or expectation that includes the perspectives of those affected about what is important to them, concerning a hazard or danger in which there is uncertainty over occurrence but which may involve adverse consequences as the possible outcome within a certain time period

Harm – an actual danger or adverse effect, stemming from direct and indirect social processes, that negatively impinges upon the health and wellbeing and ecological integrity of humans, specific biospheres and nonhuman animals

Cause – analysis of causal chains that may involve many interrelated variables but which ultimately are linked to specific practices and human responsibility for environmental harm

Justice Orientation

Environmental justice – in which environmental rights are seen as an extension of human or social rights so as to enhance the quality of human life, now and into the future

Ecological justice – in which it is acknowledged that human beings are merely one component of complex ecosystems that should be preserved for their own sake via the notion of the rights of the environment

Species justice – in which harm is constructed in relation to the place of nonhuman animals within environments and their intrinsic right to not suffer abuse, whether this be one-on-one harm, institutionalised harm or harm arising from human actions that affect climates and environments on a global scale

Futures Orientation

Intergenerational equity – refers to the principle of ensuring that the generations to follow have at least the same or preferably better environments in which to live than those of the present generation

Precautionary principle – when an activity raises threats of harm to human health, nonhuman animals or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically

Transference over time – in this context refers to the transfer of harm involving both cumulative impacts and compounding effects.

Source: White, 2011.

The challenge for green criminology is to marshal ideas and evidence from many different sources and disciplines in order to identify where harms and risks are emerging as matters of possible social and political importance, and to develop pre-emptive strategies to begin to address potential problems before they create further harms and risks pertaining to humans, specific eco-systems and animals.

In practice, horizon scanning is premised upon three interrelated tasks. These include attempts to theorise causal forces in regards to any specific issue; to employ multidisciplinary methods; and to deliberate on potential policy responses. Theory, in this instance, is based upon the key factor of anthropogenic cause – that is, the interest is in human responsibility for harm and thus issues pertaining to identification of specific perpetrators and degrees of culpability. Methodologically, the concern is to use a wide variety of methods and insights in an eclectic fashion in order to expose broad patterns of action (and omission) and causal chains of harm. Policy refers to matters relating to regulation and enforcement strategies, as well as issues of remediation and compensation. Any analysis based upon horizon scanning will most likely involve creative lateral thinking and plans of intervention that may occasionally sit uncomfortably with the existing institutional status quo.

ECOCIDE AND ECO-JUSTICE

From the point of view of international affairs we appear to be looking at a future of fortresses and scarcities, of social conflicts over resources that are increasingly culminating in expressions of public anger. These types of issues are cutting much closer to the bone than perhaps they used to – they are affecting real people in our time and real people are making their voices heard (through street level protest and social media). This is all due to the pressures that we are collectively putting on the environment. As we modify, degrade and destroy the lifeblood of this planet the tendency is to retreat into a fortress mentality that is protective of immediate perceived personal and community interests. Climate change will only exacerbate these tendencies insofar as food, energy (i.e., oil), and water come into short supply, and climate-induced migration increases due to these and other pressures.

The scramble for what is left in terms of both renewable and non-renewable resources (i.e., minerals, fish, water, trees), in the context of climate related scarcity and the accelerating limits to ecology, heighten the sense of foreboding and insecurity felt around the world. It also means that unscrupulous methods may be used in order to satisfy immediate (rather than long-term) self-interests – as in the case of illegal fishing and the use of horsemeat illegally substituted for other meat in food products. Crimes such as these are, in effect, generated by global systemic pressures on the world's ecology and resources.

ECOCIDE

Ecocide describes an attempt to criminalise human activities that destroy and diminish the wellbeing and health of ecosystems and species within these, including humans. Climate change and the gross exploitation of natural resources are leading to our general demise – hence increasing the need for the legal basis on which to prosecute such crime.

Ecocide has been defined as 'the extensive damage, destruction to or loss of ecosystems of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been severely diminished' (Higgins, 2012: 3). Where this occurs as a result of human agency, then it is purported that a crime has occurred.

The notion of ecocide has been actively canvassed at an international level for a number of years, from at least the 1960s (Higgins, Short and South 2013). For example, there were major efforts to include it among the crimes associated with the establishment of the

International Criminal Court, although the final document refers only to war and damage to the natural environment.

Nonetheless, environmental activists and international lawyers have continued to call for the establishment of either a specific crime of 'ecocide' and/or the incorporation of ecocide into existing criminal laws and international instruments (Higgins, 2012). Recent efforts, for example, have been directed at making 'ecocide' the fifth International Crime Against Peace (Higgins, 2010; 2012). The urgency and impetus for this has been heightened by the woefully inadequate responses by governments, individually and collectively, to global warming. Climate change is rapidly and radically altering the very basis of world ecology yet very little action has been taken by states or corporations to rein in the worst contributors to the problem. Carbon emissions are not decreasing and 'dirty industries', such as coal and oil, continue to flourish.

In response to such challenges, reformers argue that the law itself must be radically altered. From an eco-justice perspective, ecocide involves transgressions that violate the principles and central constituent elements of environmental justice, ecological justice and species justice.

ECO-JUSTICE

The contribution of green criminology is to frame these kinds of general issues in terms of transgressions against humans, eco-systems and animals and more broadly in the context of global economic and political pursuits. The concept of eco-justice embodies this, as it refers to the interrelated fields of environmental justice (humans and equity), ecological justice

(intrinsic value of eco-systems) and species justice (rights and needs of animals). The tendency toward the 'fortress' society (again, at all levels) undermines the possibility and practice of eco-justice in its various manifestations.

A key distinguishing point of green criminology in comparison with mainstream or conventional criminology is its concern with the *nonhuman* as well as the human (see accompanying essay by Sollund). To approach and appreciate this demands a different kind of analytical framework than usually provided within traditional criminological literature. A major factor that influences the study of environmental harm relates to the specific interests that count the most when conceptualising the nature and seriousness of the harm. For example, when criminalisation does occur, it often reflects human-centred (or anthropocentric) notions of what is best (e.g., protection of legal fisheries, legal timber coups) in ways that treat ‘nature’ and ‘wildlife’ simply and mainly as resources for human exploitation. The intrinsic value of specific ecological areas and particular species tends to be downplayed or ignored.

Nevertheless, recent years have seen greater legislative and judicial attention being given to the rights of the environment per se, and to the rights of certain species of non-human animals to live free from human abuse, torture and degradation. This reflects both the efforts of eco-rights activists (e.g., conservationists) and animal rights activists (e.g., animal liberation movements) in changing perceptions and laws concerning the natural environment and non-human species. Vital to these social processes has been the promulgation of specific conceptualisations of ‘justice’.

Eco-justice conceptions of harm include consideration of transgressions against environments, nonhuman species and humans (White, 2008; 2013). Environmental harm can be distinguished on the basis of *who or what precisely is being harmed or victimised.*
As indicated in Table 1, there are three broad theoretical approaches (within green criminology) that frame how specific writers view the nature of environmental issues, including harm and responses to harm. These approaches present different dimensions of *in*justice which are relevant to an overarching eco-justice perspective. Each approach is concerned with particular conceptions of rights and different types of harmful transgression.

Table 1:

An Eco-Justice Perspective – Three Approaches to Justice, Rights and Harms

<u>Environmental Justice and Human Rights</u>	
FOCUS:	Environmental rights as an extension of human or social rights so as to enhance the quality of human life.
CONCEPTS*:*	*Intergenerational responsibility*: the present generation has a responsibility to ensure environmental equity for future generations. *Environmental justice*: everyone has the right to a healthy environment and there ought to be environmental equity for present generations.
EMPHASIS:	Environmental harm is understood in relation to human-centred notions of value and use.
<u>Ecological Justice and Ecological Citizenship</u>	

FOCUS:	Human beings are merely one component of complex ecosystems that should be preserved for their own sake via the notion of the rights of the environment.
CONCEPTS:	*Ecological citizenship*: humans are responsible for the preservation and conservation of nature. *Ecological justice*: concerned with the quality of biosphere and rights of nonhuman species.
EMPHASIS:	Environmental harm is understood in relation to notions of ecological harm and destructive techniques of human intervention.

Species Justice and Animal Rights

FOCUS:	Nonhuman animals have rights based upon utilitarian notions (maximising pleasure and minimising pain), inherent value (right to respectful treatment) and an ethic of responsible care.
CONCEPTS:	*Anti-speciesism and animal rights*: addressing the discriminatory treatments of animals as Other. *Animal welfare*: dealing with issues of animal abuse and suffering, and the nurturing of respectful relationships.
EMPHASIS:	Environmental harm is understood in relation to the place of nonhuman animals within environments and their intrinsic right to not suffer abuse, whether this is one-on-one harm, institutionalised harm or harm arising from human actions that affect climates and environments on a global scale.

Source: modified from White 2008; see also White, 2013.

These three broadly different but connected approaches to justice together constitute the eco-justice perspective. They overlap in varying ways but ultimately have distinctive foci around which scholars and activists tend to mobilise their efforts (e.g. stopping toxic waste dumping, saving forests and/or protecting animals). Within the particular conceptual and action frameworks of each approach there are important differences based upon how specific 'interests' are conceptualised (White, 2013).

What needs to constantly be weighed up is not only the type and degree of harm as this pertains to humans, eco-systems and animals. There is also a need to assess the type and degree of harm *in particular places* (including global spaces), and how these harms impact humans, eco-systems and animals *over time*. The destruction of the environment in ways that affect humans, eco-systems, nonhuman animals, plants and other forms of life, can also be conceptualised in legal terms as evidence of a specific sort of crime – as ecocide. Justice in this case is defined not so much by how we respond to harm, but by how we broadly define it to begin with. Climate change is a prime example of ecocide.

CLIMATE CHANGE

Horizon scanning can be deployed to explore environmental issues that lay over the horizon such as, for example, the impacts of climate change (see Agnew, 2011). Description of criminology and climate change from a horizon scanning perspective is intended to alert readers to impending issues, trends and challenges. By its nature, such work will always be contentious, provocative and tentative.

Global warming is transforming the bio-physical in ways that are radically and rapidly re-shaping social and ecological futures. The latest report from the Intergovernmental Climate Change Panel (2013) concludes that:

- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased
- Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850
- Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010
- Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent
- The rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia

Scientific data continues to demonstrate the depth and scale of the problem.

The damage caused by global warming is being felt in the form of extreme weather events, increased competition for dwindling natural resources, outbreaks of disease and viral infections, further extinctions of species, continued pressure to trade off food for fuel, and the

list goes on. There are a number of issues associated with climate change that demand attention (White & Heckenberg, 2014):

- *Climate change and social conflicts over natural resources* – struggles over food, water, energy, and questions of national and international security

- *Climate change and the body* – issues surrounding nutrition, the rights of the unborn, effects of reliance upon genetically modified crops, feminisation of nature (e.g., fish) due to pollutants and climate-related processes

- *Climate change and natural disasters* – crime and criminality related to events such as floods, earthquakes, volcanic activity, cyclones/hurricanes that will intensify in the coming years due to climate change

- *Climate change and paradoxical harms* – issues pertaining to present solutions to climate change that, in turn, generate new forms of harm (e.g., mercury content of new energy-efficient light globes)

- *Climate change and carbon emission trading* – how the trading of carbon credits is linked to various kinds of crimes, including for example, fraud and the displacement of local people from their lands (e.g., as has occurred in Africa)

- *Climate change and victimisation* – the ways in which climate change, and climate change policies, have implications for victimisation both at a universal level (i.e., everyone in the world is affected) and differentially (i.e., the poor, marginalised,

women and children are especially vulnerable to the worst impacts of environmental change)

- *Climate change and injustice* – this relates to who the key perpetrators of global warming are, and to patterns of production and consumption that illustrate the unequal relations upon which climate change has been built

- *Climate change, the law and the precautionary principle* – issues relating to uncertainty and potential hazards, and the ways in which risk of harm and criminal activity might be anticipated in law through the application of the precautionary principle

There is no doubt that global warming, affecting the world's climate systems, will have massive and ongoing consequences for humanity, eco-systems and nonhuman animals for many years to come.

From the point of view of horizon scanning, a number of things can be predicted that are of relevance to green criminology. For instance, various crimes tied to climate-related events such as food riots and climate-induced migration will become more prevalent (South, 2012). Some of these, for example, include looting and blackmarketeering in relation to food stuffs, illegal fishing and killing of birds and land animals, trafficking in humans and in valued commodities such as water and food, and carbon emission trading fraud. Climate change demands systematic analysis from criminologists utilising a range of methods and from a range of perspectives (see for example, Peng, Xueming, Hongyong and Dengsheng, 2011; Mares, 2013; White, 2012ab; Agnew, 2011; Kramer and Michalowski, 2012). Developing an

integrated and detailed picture of environment-related crime and criminality is a major project of green criminology, and climate change is one area deserving highest priority.

Given existing climate science and climate modelling forecasts into the next few centuries, it is also possible to provide immediate critique of both the cumulative carbon emissions still occurring and the failure to enact scientific and evidence-based policy measures relating to carbon emissions in order to protect present and future generations (Schneeberger, 2011). Put simply, contemporary scientific evidence provides an objective basis for a charge of 'ecocide' since the evidence demonstrates long-lasting serious environmental harm and the perpetrators may be 'in-denial' but are not ignorant of the issues at stake.

STATE-CORPORATE CRIME

The question of justice in relation to climate change inevitably leads one to consider the nature and dynamics of state-corporate crime. This is because the perpetrators and the responders to global warming tend to be one and the same: namely, nation-states and transnational corporations.

State-Corporate crime has been defined as 'illegal or socially injurious actions that result from a mutually reinforcing interaction between (1) policies and/or practices in pursuit of the goals of one or more institutions of political governance and (2) policies and/or practices in pursuit of the goals of one or more institutions of economic production and distribution' (Michalowski and Kramer, 2006: 15). When it comes to climate change, it has been argued that this provides a classic example of state-corporate crime. Specifically, corporate and state

actors in interaction with each other create harms in four ways (Kramer & Michalowski, 2012):

1. by denying that global warming is caused by human activity
2. by blocking efforts to mitigate greenhouse gas emissions
3. by excluding progressive, ecologically just adaptations to climate change from the political arena, and
4. by responding to the social conflicts that arise from climate change by transforming themselves into fortress societies that exclude the rest of the world.

State-corporate crime relates to both *acts* (e.g., Alberta Tar Sands) and *omissions* (e.g., failure to regulate carbon emissions, reliance upon dirty energy sources). Failure to act, now, to prevent global warming is criminal. Yet, things continue much as they have, the status quo is maintained, and the harms mount up. This is the essence of ecocide.

Paradoxical harm is harm that arises out of an apparent contradiction (for instance, we have to pollute certain parts of the planet in order to save it from other types of pollution) (White, 2012b). Specific examples of paradoxical harm include the adoption of compact fluorescent light globes to save energy (but which contain toxic mercury), promotion of nuclear energy (but which involves disposal of nuclear waste), and carbon emission storage (that penetrates and despoils the subterranean depths of land and sea). Paradoxical harm is not the same as unintended consequences. In many instances the harms are known, and the acts leading to the generation of the harms are intentional. The harm is paradoxical in the sense that while seemingly contradictory (we generate harms as a means to forestall other harms), it is perfectly logical from the point of view of the imperatives of the system as a whole.

Economic and social interventions that sustain the status quo (and that include maintaining the viability of "dirty" industries) are favoured over those that might tackle the key drivers of climate change and that could diminish the burgeoning threats to ecological sustainability worldwide.

The 'choices' ingrained in environmental exploitation stem from systemic imperatives to exploit the planetary environment for production of commodities for human use. In other words, how human beings produce, consume and reproduce themselves is socially patterned in ways that are dominated by global corporate interests. The power of consumerist ideology and practice manifests itself in the way in which certain forms of production and consumption become part of a taken-for-granted common sense, the experiences and habits of everyday life (Brisman and South, 2014). It is also manifest public policy.

The global status quo is protected under the guise of arguments about the 'national interest' and the importance of 'free trade', which usually reflect specific sectoral business interests. But at the same time, humanity has certain common interests – universal human interests – such as the survival of the human race and other species in the face of threats like global warming and climate change. These common interests need to take priority over any other kind of interests if humans and other species are to survive. Yet, this is clearly not happening. As the recent IPPC (2013) report points out:

- The atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years
- Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions

- Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes
- Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions
- Most aspects of climate change will persist for many centuries even if emissions of carbon dioxide are stopped. This represents a substantial multi-century climate change commitment created by past, present and future emissions of carbon dioxide.

In part the lack of serious response and action is due to resistance and contrarianism perpetrated by powerful lobby groups and particular industries. This is most evident in state support in countries like the United States, Canada and Australia for risky businesses:

- Oil and coal industries and other 'dirty' industries
- Coal-seam fracking and other threats to prime agricultural land
- Deep-drill oil exploration and exploitation
- Mega-mines and open-cut mining

Accompanying support for these industries, there is resistance to global agreements on carbon emissions and use of carbon taxes.

Simultaneously, there is agreement to changes in land use, such as deforestation in favour of cash crops, bio-fuels, mining, and intensive pastoral industries. Besides being problematic for those immediately affected by it (e.g. humans and animals living in and sustained by those

forests), tropical deforestation is now becoming an international political issue because it is responsible for twenty percent of global greenhouse emissions (Boekhout van Solinge, 2010). Indonesia and Brazil have now become respectively the third and fourth CO^2 emitting countries of the world, mainly as a result of clearing rainforest. States have given permission and financial backing to those companies engaged in precisely the activities that will radically alter the world's climate the most in the coming years by producing greenhouse gas emissions

The exploitation of Canada's Alberta tar sands provides another case in point. This massive industrial project involves the active collusion of provincial and federal governments with big oil companies. The project is based upon efforts to extract and refine naturally created tar-bearing sand into exportable and consumable oil. One result of the project is a wide range of different types of harm to the ecosystem, animals and humans. For example, it has been pointed out that the tar sands oil production is the single largest contributor to the increase of global warming pollution in Canada. It will lead to the destruction of vast swathes of boreal forest, it contributes greatly to air pollution, and it is having negative health impacts on aquatic life and animals, and for humans who live nearby (see Smandych and Kueneman, 2010; Klare, 2012).

For those who study this type of environmental degradation and its association with considerable social and ecological harm, the concept of state-corporate environmental crime is considered entirely appropriate as a descriptor (Smandych and Kueneman, 2010; Ruggiero and South, 2013). Placed within the larger global context of climate change, the scale and impact of this kind of exploitation also fits neatly with the concept of ecocide. The role of the

federal and provincial governments is crucial to the Tar Sands project and to propelling it forward regardless of manifest negative environmental consequences.

The politics of denial (at both the level of ideology and policy) is propped up by various techniques of neutralisation (see Sykes and Matza, 1959; Cohen, 1993, 2004). Typically, such techniques involve the following kinds of denials:

- *Denial of responsibility* (against anthropocentric or human causes as a source of problems)
- *Denial of injury* ('natural' disasters are 'normal')
- *Denial of the victim* (failure to acknowledge differential victimisation especially amongst the poor and Third World)
- *Condemnation of the condemners* (attacks on climate scientists)
- *Appeal to higher loyalties* (American economic interests ought to predominate)

Business and state leaders employ such techniques, arguments and assumptions as they attempt to prevent action being taken around climate change while actively supporting specific sectoral interests. The net result is inaction on addressing the key factors contributing to climate change, such as carbon emissions.

There is a close intersection between global warming, government action or inaction and corporate behaviour (Lynch and Stretesky, 2010) and how these all contribute to the overarching problem of climate change. In this instance the state is itself implicated as a perpetrator of harm. Government subsidies for coal-fired power stations and government approval of dams that destroy large swathes of rainforest constitute substantial crimes against

nature. In the light of the existing scientific evidence on global warming, continued encouragement of such activities represents intentional harm that is immoral and destructive of collective public interest in the same moment that particular industries and companies benefit.

Given the stakes involved, we might well ask, should the impending destruction of ecosystems, and the human collateral damage associated with this, be thought of as a form of environmental genocide – ecocide? If so, then it is state leaders and government bureaucrats, as well as corporate heads and key shareholders, who should ultimately be held responsible for this crime.

The political economic relations of global capitalism are crucial in any discussion of environmental harm insofar as how, or whether, certain human activity is regulated and facilitated is still primarily a matter of state intervention. The ways in which nation-states (and varying other levels of government) attempt to deal with environmental concerns is contingent upon the class interests associated with political power. In most cases today the power of transnational corporations find purchase in the interface between the interests and preferred activities of the transnational corporation and the specific protections and supports offered by the nation-state. The latter can be reliant upon or intimidated by particular industries and companies. Tax revenue and job creation, as well as media support and political donations, may depend upon particular state-corporate synergies. This of course can undermine the basic tenets of democracy and collective deliberation over how best to interpret the public or national interest.

The structure and allocation of societal resources via the nation-state also has an impact upon how environmental issues are socially constructed. Spending on welfare, health, transportation, education and other forms of social infrastructure makes a big difference in people's lives. Recent fiscal crises (especially noticeable in European countries such as Greece, Ireland and Spain) and the impact of the global economic 'meltdown' have made ordinary workers extremely vulnerable economically. Under such conditions, there is even greater scope – and profit oriented incentives – to either reduce environmental protection, or to increase environmentally destructive activity, to the extent that existing state legislation and company practices are seen to put fetters on the profit-making enterprise. This is so whether the activity is in the metropole countries or in the periphery.

CONCLUSION

Global warming is rapidly changing the ecological and economic landscape of the planet. As a consequence problems of scarcity will exacerbate social conflict in many parts of the world and crimes of many different types will flourish. In order to formulate and support any actions that can mitigate or prevent such disastrous outcomes concepts such as human rights, ecological citizenship and the global commons need to be be developed and applied in ways that assert the primacy of 'climate justice' over narrow sectional interests. For this to occur there is a need for strong action within civil society to progress a more radical social change agenda. As part of this, criminologists (among others) must insist upon the protection of democratic spaces within which popular struggles can occur, given the powerful social interests opposed to needed climate change solutions.

Finally, the role of criminology itself will come into question around these issues. In conventional terms, it could well be simply the handmaiden of a repressive state, if criminology uncritically accepts a 'National Security' agenda. This would translate into defence of dirty industries, resource protection internally and externally, and collusion of criminologists against climate change activists (perhaps under the rubric of fighting against 'eco-terrorism').

Alternatively, a progressive and green criminology will be defined in terms of its role as defender of social and ecological justice. The task is to conduct research that explores different types of environmental harms and crimes, the modus operandi of the key perpetrators and the consequences of such transgressions, including their contribution to global warming and climate change. It could also be to draft instruments such as an Environmental Victims Charter that speaks of repairing the harm and ensuring compensation for human and nonhuman victims of climate change.

In the end, the promise of green criminology lies in this type of 'Big Picture' analysis. Our concerns are inclusive and expansive across several theoretical and practical domains:

- Ecological health and wellbeing, including intersections between climate change, biodiversity and waste and pollution

- Transnational processes and institutions, and relations of power and domination expressed through geographical space and over time

- Social and ecological justice, that extends to the human and the nonhuman

Analysis and action across these domains necessitate a multi-dimensional, multi-disciplinary criminological imagination. This, too, is a feature of contemporary green criminology.

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