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Toxic State–Corporate Crimes, Neo-liberalism and Green Criminology: The Hazards and Legacies of the Oil, Chemical and Mineral Industries

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Abstract

This paper uses examples from the history and practices of multi-national and large companies in the oil, chemical and asbestos industries to examine their legal and illegal despoiling and destruction of the environment and impact on human and non-human life. The discussion draws on the literature on green criminology and state-corporate crime and considers measures and arrangements that might mitigate or prevent such damaging acts. This paper is part of ongoing work on green criminology and crimes of the economy. It places these actions and crimes in the context of a global neo-liberal economic system and considers and critiques the distorting impact of the GDP model of 'economic health' and its consequences for the environment.

Keywords

Oil, chemical and asbestos industries, green criminology, state-corporate crime, neo-liberalism, Gross Domestic Product.

Introduction

This paper uses examples from the history and practices of multi-national and large companies in the oil, chemical and asbestos industries to examine their legal and illegal despoiling and destruction of the environment and impact on human and non-human life. Despoilation is here defined as plundering and taking what is valuable and / or depriving others of what is valuable by force or without giving others the benefit of choice about actions that affect them. This effectively sums up much of what concerns us about the impact of crimes of the economy on the environment. The discussion draws on the literature on green criminology and state-corporate crime and considers measures and arrangements that might mitigate or prevent such damaging acts. This paper is part of ongoing work on green criminology and crimes of the economy (Ruggiero and South 2010, 2013).

History: Multi-national and state-national resource exploitation

According to White (2013a: 255), 'The most criminogenic agents of environmental harm within a global capitalist political economy are members of the capitalist class, operating within the institutional context of transnational corporations'. Power misused or used for profit to the exclusion of all else is likely to cause harm. Business and government interests exploit both environmental resources and human labour. But even more damaging is that, although all this may apply to market economies in general, hegemonic discourses around 'growth and freedom' have, during the last few decades, intensified the potential destructiveness of enterprise. In this respect, neo-liberal doctrines contradict their very axioms: namely, that the full costs of transactions must be borne by the involved parties. Many economic activities and transactions, on the contrary, exact a significant price on humans and ecosystems, although conventional economists label such price with the reassuring euphemism 'externalities'. In brief, neo-liberalism regards environmental harm as accidental, unintentional and external – but also, unimportant.

A perfect formulation of unintended consequences or externalities is found in Hayek's argument whereby only actions affecting other persons will give rise to legal rules (Ruggiero 2013). 'Actions which are clearly not of this kind ... which clearly cannot affect or harm others, can never become the subject of rules of conduct' (Hayek 1973: 101). In a crucial proviso, however, it is stressed that 'some harm knowingly caused to others is even essential for the preservation of spontaneous order'; for example, the law cannot prohibit 'the setting up of a new business even if this will lead to the failure of another' (Hayek 1973: 102). Law and legality, therefore, incorporate a range of conflicting expectations, some of which are bound to prevail, and we constantly have to decide which deserve priority. Decisions in this respect will, in some measure, be part of an experimental process.

In the course of this process it will be found not only that not all expectations can be protected by general rules, but even that the chance of as many expectations as possible being fulfilled will be most enhanced if some expectations are systematically disappointed. This means also that it is not possible or desirable to prevent all actions which will harm others but only certain kinds of actions. (Hayek 1973: 102)

This justification for the necessity or desirability of harm is accompanied by a view of economic growth as a matter of constant change and, consequently, as an incessant discovery of new methods of creating wealth. According to this view, the only way to establish which methods are legitimate consists in the drawing of precise boundaries within which action is acceptable. This entails the demarcation of a range of 'objects over which only particular individuals are allowed to dispose and from the control of which all others are excluded' (Hayek 1973: 107). The distinction Hayek makes between *meum* and *tuum* ('mine' and 'thine') has to be clearly drawn: 'good fences make good neighbours'. From this perspective, by drawing boundaries, the aim of the law is merely to prevent, as much as possible, the actions of different individuals from interfering with each other. The law cannot be concerned with the effects of such actions on different individuals and justice should not be concerned with the results of the various transactions but only with whether the transactions themselves are fair. Harm against humans and the environment, therefore, may be a *fair outcome* of economic initiative.

Within the neoliberalism world-view, the entire planet is given to those who are most capable of exploiting it. The environment is therefore both *meum* (mine) and *tuum* (yours), provided we both know how to maximise extraction of value from it. Boundaries are not determined by the identification of objects over which different individuals may or may not exercise control but merely by the capacity and ingenuity of such individuals which constitute the only limits to

initiative and development. The ultimate resource, in brief, is the human mind and throughout human history the genius of the species for enterprise and exploitation has always won out against the restraints and resistance of nature.

Perspectives: State-corporate crime and green criminology

In his classic contribution to criminology, Sutherland (1949) famously pointed out that research on the crimes of the powerful is difficult without a willingness to expand one's sample well beyond the legal definitions of crime. Two perspectives that draw upon this insight are considered and applied here – state-corporate crime analysis and green criminology.

Kramer et al. (2002; see also Katz 2010) define the state-corporate crime approach as being concerned with:

... 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. (Kramer et al. 2002: 271)

Katz (2010) shows how the state-corporate crime perspective developed by Kramer et al. can be usefully applied to cases involving corporate power and environmental crime at local and global levels and there are many other examples of environmental harms and crimes that can be seen as state-corporate crimes (Kramer and Michalowski 2012; Smandych and Kueneman 2010). Examples include: corporate criminality and its impacts on the environment, such as pollution; health and safety in the workplace where breaches have environmentally damaging consequences; involvement of criminal entrepreneurs and corrupt officials in the illegal disposal of toxic waste; and the impact and legacy of law enforcement and military operations on landscapes, water supply, air quality and living organisms populating these areas – human, animal and plant. A Green criminology perspective can also be brought to bear on such actions and impacts. 'Green criminology' is an umbrella term to cover and capture the study of ecological, environmental or green crime or harm, and related matters of speciesism and of environmental (in)justice (South et al. 2013; South and Brisman 2013; White in press). It is not intended to be a unitary enterprise – diversity is one of its great strengths; it remains an evolving perspective (see, for example, South 1998: 212-213; White 2008:14). Adopting a green criminology approach and describing the impacts of eco-crime, Walters (2010) writes that:

The contamination of drinking water, the degradation of soil and the pollution of air and land all expose people (usually those in poor and developing countries) to substantial health risks ... [and notes that] As Hauck (2007) has observed, acts of eco crime are linked to the poverty and social dislocation, as well as the mental and physical debilitation, of people who are victims of corporations and states that deliberately violate environmental agreements. (Walters 2010: 181)

The case studies discussed below provide key examples.

Oil crimes: Criminogenesis and despoilation

The oil industry is involved in various forms of crime and harm and in varying ways. Direct crimes and harms of pollution may be seen as the 'primary' or principal offences here. However, as noted elsewhere (South et al. 2013: 29-30), it is also important to record the incidence of 'secondary' crimes and harms in which the existence or activity of an operation or configuration of operations can be criminogenic, attracting and/or facilitating and/or causing other crimes and harms. Thus oil exploitation and enterprises can also contribute to the creation of criminogenic environments in which others are incentivised or pushed to offend. For example,

some oil rich countries are described as incubators for criminal enterprise, where oil companies are the ‘crime victims’ and the illicit profits that result are used for financing other illegal activities. Official reports have drawn attention to, on the one hand, the use of diverted oil profits to fund campaigns of violence – including terrorism – and, on the other, the weakening of already fragile states caused by crimes committed against the oil sector. McHugh (2012: 2) provides analysis of this complex set of inter-relationships and also provides insights into the nature of illicit oil trading.

According to McHugh, illicit and unrecorded crude oil trading occurs in several different ways:

Smuggling: While being an international industry, oil does not have standardised pricing. In some countries subsidies and tariffs distort the market and can result in higher or lower costs. Because oil is obviously a valuable and transportable resource, this differential in pricing in different markets means that domestic and transnational illegal markets are incentivised and vulnerable elements of the population in oil wealthy states who do not benefit from energy revenues may find smuggling oil a useful alternative source of income. This is a case of what Passas (1999) calls ‘criminogenic asymmetry’.

Mingling: This form of oil theft occurs through the mingling of officially-sourced and unofficially-sourced oil. In this case, criminal entrepreneurs are able to directly extract a quantity of crude oil beyond the amount officially licensed. However, sustained and sizeable ‘mingling’ operations are usually made possible by the complicity of corrupt officials and/or employees of the oil companies themselves. The illicit portion extracted is then transported and sold on the illegal market.

Bunkering: This theft method entails the direct theft of oil from ships and pipelines. The method, however, may be complex and risky due to surveillance and the equipment required. For this reason it may be easier to accomplish and more prevalent in situations of high social and political instability. Conditions of conflict have always been, and remain, a risky but useful cover for pillage.

All three of these types of enterprising economic behaviour are particularly prominent in contexts in which well-structured criminal organisations operate and where illegal enterprises are meshed with violent insurgent groups: in Iraq and Nigeria, for example. In such contexts, political and economic purposes intertwine and conflict is exacerbated by hostile feelings aligned against foreign-owned companies and the national military forces that are securing this extraction of wealth for the domestic elite and for the externalisation of profits to overseas companies. Transparency International’s ‘Corruption Perception Index’ ranks oil-producing states in the Middle East, Africa and South America as among the most corrupt in the world.

There is, therefore, a close connection between crime – including violent crime – and oil, as exemplified in these and the following cases. First, the oil industry generates a ‘rentier effect’ (the literal ‘renting’ of Indigenous resources to external parties), producing revenues for oil-rich countries but in contexts where elites fail to equitably distribute the incoming wealth among the wider population (Brisman and South 2013: 60). Corruption is widespread, with parts of the incoming revenues being appropriated by government officials and mediators who transfer them into their own bank accounts abroad. The civil war in Sudan, the largest country in Africa, is a good example of how systemic forms of crime and violence are central to the geopolitics of oil.

The inequitable distribution of the costs and benefits of oil production fueled the Sudanese civil war. The war resulted in approximately 2 million deaths, 4 million internally displaced, 420,000 refugees, and approximately 2,500 rebel child soldiers. (Parr 2013: 140)

In order to allow foreign companies to extract oil in its territory, the Sudanese government expelled the Indigenous population from their lands, which resulted in violent protest by locals who depended on the land for their livelihood. The creation of the Sudan People's Liberation Army (established in 1983) was the ultimate outcome of this process (Switzer 2002). Similarly, in Nigeria, where in the post 9/11 era the US has sought its main source of oil supply, social tension has led to the development of organised violent contest and conflict. The Ogoni from the Delta region, where Nigeria's vast oil reserves lie, have incurred the costs of oil extraction but have been excluded from the enjoyment of the wealth generated. In general terms, the multi-billion-dollar oil industry of Nigeria has not produced an increase in per capita annual income in the country: in fact, income has fallen, with the number of Nigerians living on less than one dollar a day increasing from 36 per cent in 1970 to more than 70 per cent in 2000. Moreover, foreign companies operating in the country have set up their own paramilitary forces to protect their business and funded local groups of mercenaries to respond to attacks by violent political organisations (Watts 2008). In this way, corrupt practices, impoverishment of local people and military action have mingled and fed on each other in many oil producing countries (Amnesty International 2001; Everest 2003; Klare 2004; Parra 2004).

There are, of course, other ways in which the intertwining of big oil, corporate interests and state complicity has consequences for the conditions of human and environmental life.

Beyond Petroleum?

On 20 April 2010, the BP (British Petroleum) Deepwater Horizon operation blew out in the Gulf of Mexico, spilling almost five million barrels of oil and killing 11 workers. Neither the short-term environmental damage nor long-term impacts of this event have yet been fully assessed (Achenbach 2011; Bergin 2011; Schwartz 2011). BP blamed Transocean, the company that owned and operated the drilling rig, and Halliburton, which carried out the cementing job. It was difficult to establish whether BP itself was responsible or whether this was the inevitable outcome of the risky offshore business. The story of BP grants validity to both hypotheses.

John Browne was the company's chief executive between 1995 and 2007 and was credited with 'turning a sleepy, tradition-encrusted firm into an aggressive top-rank juggernaut' (Maass 2011: 38). Browne earned a business degree from Stanford University and applied the management principles learned there to the reorganisation of the company (Schwartz 2011). BP was divided into strategic business units, workers were fired, and managers were given short-term contracts with renewal linked to meeting targets based on high volume production at low costs:

Those who could extract the most oil while spending the least money were rewarded with promotions and bonuses. Promising junior executives were shuffled between posts and over the world, rarely staying anywhere long enough to bother replacing outdated equipment or rusting pipelines. (Schwartz 2011: 25)

Yet Browne covered this operational 'business as usual' with a claim to be striving for a new way of doing things, adopting the 'sunburst' logo and new aspirations in which BP was said to stand for 'better people, better products, big picture, beyond petroleum'. Moving 'Beyond Petroleum' was a claim to green credentials and a natural, clean image. This is, after all, a message many or most consumers would like to buy into – we can have what we want to fuel our consumer lifestyles because the necessary resources can be replaced, renewed or are limitless.

The 'beyond petroleum' strategy was a classic case of greenwashing. This is not to say energy companies would not like to find exploitable and infinitely available sources but they have not

done so yet and, until they do, they will manufacture messages of denial about the ongoing harms of current methods of extraction, production and distribution. Nor is this to say that the big corporations alone are solely responsible for damage done and demand that continues unassuaged. Agnew (2013) has recently been reminding us that everyday consumption behaviours constitute contributions to an accumulating ecocide as individuals and small groups engage in a range of ‘ordinary’ acts such as driving cars that use large amounts of fuel, living in un-necessarily large homes that are over-heated or over-cooled, and so on. In this light, it was an interesting reflection of lack of such insight that, during the 2010 BP oil spill, a sign was erected in a village in southern Louisiana with the message ‘Damn BP! God Bless America!’. To condemn large oil companies for catastrophic failings is understandable but such events should ideally lead to some reflection on the life-style of those demanding greater efficiency and productivity from their operations. Within a year the US public was once again supporting ‘energy exploratory initiatives even if they were made at the expense of environmental concerns’ (Parr 2013: 131). More appropriately, the sign should have borne the slogan: ‘Damn an economic system based on an assumption of infinite growth’.

Environmental harm is not, of course, exclusively associated with privately-owned oil companies. Even when sovereign states take over the control of the oil industry, they may do equally little to curtail the risks inherent to the industry. For example, in June 2013, an oil spill in the Ecuadorean Amazon spread downstream towards Peru and Brazil. Approximately 1.6m litres of crude oil were discharged into local rivers, contaminating the drinking supply of Coca in Ecuador, a gateway city into the Amazon forest (Watts 2013). Peru reported traces of oil in its Amazon region of Loreto while Brazil, hundreds of miles downstream, put its navy on alert. The environment of Ecuador, the smallest member of OPEC, has long suffered from the actions of the powerful oil industry and in 2001 the country’s courts ruled that US oil firm Chevron should pay \$8.6 billion in compensation for the dumping of about seven billion litres of waste over several decades. Today, the oilfields are ‘largely owned and operated by domestic state-run companies’ but, rather than decreasing output, ‘the government plans to raise production in the Amazon to fund an ambitious development programme’ (Watts 2013: 19).

We also know that the corporate-state regulatory system allows the oil companies themselves to provide key measure of the extent of oil spills and damage and that, as research published in *Nature* shows, this is – unsurprisingly – often an under-estimate of the true extent of spill and damage (Schrope 2013).

And this, of course, relates to cases that are known and reported. There are spills, leaks and ecological damage occurring on a highly regular basis across the world, the majority never attracting the kind of publicity attached to BP Deepwater Horizon (Brisman and South 2013: 9-10). Here, White’s concept of eco-global criminology is relevant to the different environmental stories and differentiated experience of justice playing out around the world.

Chemical crimes: Hazards and toxicity

Many hazardous substances cause chemical injury and, with thousands of new chemicals introduced each year, it is very difficult to estimate their long-term effects. Chemicals are not typically tested for brain, immune and hormonal effects, and often not tested at all for cancer, neurodegenerative or autoimmune effects. Inadequate testing greatly limits knowledge for prevention of harm, choosing safer substances and technologies, and linking damage to exposure for affected persons, non-human species and the wider environment (Lynch and Stretesky 2001).

On a larger scale, research into chemical crimes is hampered by often-successful attempts to depict violations of laws, regulations or just good practice, as ‘accidents’, ‘oversights’, ‘failures of communication’, ‘administrative errors’, and so on. According to Pearce and Tombs (1998),

human error is transcended and attention is drawn to general categories of accident causation. The first such category is 'resourcing', which refers to a range of in-built deficiencies characterising the chemicals industry as a whole: its personnel, hardware, production pressures, planning, communication, training, plant design and maintenance. All of these causal factors, which are also termed first-order causes, are underpinned by second-order causes, among which Pearce and Tombs include and critique 'the inherent drive towards maximisation of profits in a capitalist system', technological complexity, amoral calculation, and the inevitability of mistakes. To illuminate the nature of second-order causes of accidents, they argue 'for the need to combine understandings of the nature of social relations in chemicals plants within a macro political economy' (Pearce and Tombs 1998: 140). They stress the scope for manipulation of communication and remark that 'errors' are rooted within the power of management to select which aspects of knowledge are likely to be shared and released more widely and which are destined to remain part of 'repressive or distorted communication'. This is a Habermasian expression that the authors identify with the capacity of managers to 'limit the potential for workers and their representative organisations to participate in decision-making processes which bear crucially upon the possible prevention of industrial accidents' (Pearce and Tombs 1998: 141). Classic case studies within the area of chemical crimes include the range of illegal conducts found in the pharmaceutical industry and the notorious Bhopal disaster, caused by the toxic gas leak at the Union Carbide plant in India (Braithwaite 1984; Cassels 1993; Kluin 2013; Pearce and Tombs 1993).

Chemical crimes occur during the production, distribution, use, storage or disposal of chemical substances *which can reasonably be expected to result in harm to people's health or safety and/or to the environment* (Salinger 2013). Such crimes may be committed by offenders *who have knowledge of the risks posed by the chemical agents they deal with and/or by offenders who reject the use of alternative substances which would reduce such risks*. Harm can be caused during the production, transportation or storage of the chemical substances in question, or during their use for other productive purposes, as we illustrate below.

Toxic chemicals: The case of Dow and Agent Orange

Dow Chemical, founded in 1947 and merged in 2001 with Union Carbide (as noted above, a company not without its own history of catastrophic accident), is a global operator producing chemicals and plastics for a variety of different markets. Importantly, in terms of how 'state-corporate crime' 'works', like other major global corporations, Dow can call on more financial and legal resources than any state or industry agencies charged with the task of regulation (Katz 2010).

As Katz (2010) describes, the involvement of Dow Chemical in the production of herbicides for military use provides a classic case study of state-corporate crime. It began in World War II as part of a project that was initially based at the University of Chicago but soon re-located to the military research facility at Fort Detrick, to produce a herbicide with the now obvious intention of investigating the potential of the chemical as a weapon. If the 1950s saw the use of Dow's products (labeled 2-4-D and 2-4,5-T) as weed-killing herbicides, all changed with the Vietnam conflict of the 1960s. As Katz recounts:

Dow returned to developing these substances for use as the main ingredients in Agent Orange ... Substantively, Dow became embedded with the federal government as a result of an alliance to produce a weapon, or in the language of the government, the company became integral to national security, necessitating a comfortable mutually beneficial relationship. (Katz 2010: 297)

The product was shipped and transported in orange-striped barrels (from which the name Agent Orange may derive) with 20 million gallons sprayed across 8,600 square miles of forest

cover and fields in Vietnam, Laos and Cambodia as a major tactic of war between 1961 and 1971. In 1971 the US National Institutes of Health conducted tests that concluded that the chemicals involved could cause birth defects in laboratory animals and the US finally ceased use of Agent Orange. However this was far too late to avoid both the immediate and lasting legacy which included the effects of exposure on hundreds of thousands of civilians and soldiers, both Vietnamese and American. In addition, the civilian population would have been further exposed through the use of empty barrels for water storage and because waterways, soil and the food chain were all affected (The Week Staff 2012).

The medically identified and related effects of exposure have included leukemia and blood disorders, heart disease, and children with birth defects such as spina bifida and limb and bone defects. In the US:

For years, the US military, citing research by Dow Chemical ... denied any link between exposure and veterans' illnesses. In 1991, Congress passed the Agent Orange Act, which lists more than a dozen cancers and other illnesses for which the VA [Veteran's Administration] must compensate veterans. (Katz 2010: 298)

As one follow-up action, from 2012-16, the US will spend \$44 million on cleaning up some (though not all) of the legacy of this state-corporate crime, aiming to extract dioxin residues affecting the area where most barrels were stored at the former US airbase in Danang. According to US Ambassador David Shear, these are 'the first steps to bury the legacies of our past' but, of course, the damage done to people and the environment cannot be undone (Reuters 2012).

Asbestos: Human health costs and environmental harms

The activities of extraction and processing corporations and the particular case of the asbestos industry are also deserving of some consideration here. As White (2013b: 52) acknowledges: 'Resource extraction has a long history and extensive geographical reach. It is also tied to who has the power to do what, where, how cost effectively, and for whose benefit'. White also notes that resource extraction, mining and processing can be 'vitally important to national economies and corporate profits, especially where overall gross domestic product is reliant upon these types of industries' (White 2013b: 50). At the same time, it has to be emphasised that this chain of extraction through processing to product 'is not socially and environmentally neutral but has a number of potential ramifications directly related to ecological wellbeing and human health' (White 2013b: 50).

The mining and subsequent chemical and industrial processing of asbestos is illustrative of the potential for significant harms to be generated from the point of primary extraction to final use, including the historical widespread incorporation in buildings. Processing is potentially lethal to workers and damaging to entire local communities when dust is distributed beyond production plants and into the surrounding environment, with fibres not only being inhaled but also settling on land and water. The properties and versatility of asbestos undoubtedly explain its long use and the denial of problems associated with both its production and its instability and deterioration *in situ*. But this denial has continued for over a hundred years, leaving a tragic history of chronically painful deaths and disease behind. The dangerousness of asbestos was observed in Britain by Factory and Workshop Inspectorate officers as long ago as 1898 (Tweeddale 2000) and, in the early decades of the twentieth century, its lethal effect was related to the death of textile workers in France. Soon, the deaths attributed to the substance numbered in the thousands and, in the 1960s, it emerged that relatives of workers breathing asbestos were also at risk, along with residents in areas with a high presence of the substance. Around the end of the 1990s, a study by the European Environmental Agency (EEA) estimated that, by 2035, the number of people developing lung cancer could reach 300,000-400,000. In total, the estimate

indicates that, throughout the last century, around four million people died in Europe from asbestos-related illnesses. The use of asbestos was banned by the European Union in 1999, 101 years after the discovery of its danger. One of the reasons it took so long to ban the substance was because asbestos 'kills slowly' and, in many cases that were ever actually brought to court, lawyers as well as pathologists could easily dismiss the association of asbestos with lethal respiratory conditions.

One case has particular relevance because of its international implications and because it also marked the closing chapter of a 100-year history of industrial catastrophe. In June 2013, the Appeal Court of Turin in Italy sentenced Swiss billionaire Stephan Schmidheiny, former manager of the Eternit company, to 18 years imprisonment for environmental disaster and violation of health and safety regulations. According to the European Industrial Relations Observatory:

Eternit opened its first asbestos production plant in Italy, the biggest in Europe, in 1907 at Casale Monferrato in Piemonte. Later, complexes were opened at Cavagnolo in Piemonte, Rubiera in Emilia Romagna, and Bagnoli in the province of Naples. Although it has been known since 1962 that asbestos dust causes asbestosis and malignant mesothelioma, Eternit only closed its last Italian plant in 1986. *Throughout the plants' production life, an enormous quantity of asbestos dust was dispersed into the atmosphere through factory chimneys that had no protective filter. The countryside, communities and water supplies around the plants were contaminated. Within the plants, workers were given no protection and were never informed of the health risks* [emphasis added]. (Rinolfi 2012: 3)

According to the judges, evidence that owners and managers were well aware of the lethally hazardous work conditions in the plant was provided by their willingness to pay 'risk bonuses' to those who accepted to work in certain specific productive operations (Altopiedi 2013).

Popular mobilisation and citizen action played a major role in bringing this history of harm into the arena of media news and the courts. A long-running and contentious affair was eventually transformed by popular political protest from a matter officially deemed an 'accident' into a trial concerning calamitous negligence and effectively a case of corporate mass killing. With an estimated number of victims of 2,857 (1,800 of whom were deceased at the time of the verdict) the trial attracted enormous attention, hearing more than 9,800 witnesses and with hundreds of people attending the last day of the trial when the sentence was announced. Delegations from Belgium, the Netherlands, France, Switzerland, Brazil and the US were also in court on that day, taking inspiration for similar actions to be initiated in other national contexts.

The seriousness of the sentence was without precedent and can be seen to constitute the epilogue to a story spanning 150 years. However, the sentence also transcends the specific crime committed by Eternit, for it reinforces a principle of 'precaution'. When faced with productive processes where the outcomes and consequence are likely to be severe, urgent measures need to be taken even when available evidence is not overwhelming and even if this includes the total suspension of production. In this particular case, the application of such a principle might have saved thousands of lives (Gallino 2013).

Responses, mitigation, prevention

White (2013: 255) points out that 'not everything that TNCs [transnational corporations] do is bad or wrong, and not every TNC necessarily engages in things that harm the environment ... This complicates analysis of perpetrators.' As noted above, ordinary consumers are polluters and the drivers of demand for the 'goods' that bring with them environmental 'bads'. But different consumers and different producers behave in different ways. There is diversity in

market behaviours and inhuman behaviours and there are points of action, change and leverage to be noted and used.

Dybing (2012: 289), drawing on research and experience in Norway, suggests that control and regulatory agencies alone may not be sufficient to prompt a company to take responsibility for behaviours and that impacts and other responses such as public 'class actions' designed to provide a collective means to obtain remedy from the company can be powerful alternatives. Of course, as noted above in relation to large chemical companies like Dow, the legal resources available to these businesses to counter and contest claims can be formidable. In the case of Norway, Dybing (2012) suggests that close monitoring and collaboration with companies can go hand-in-hand and be effective.

The environmental movement in Norway has for the last two decades fought to get publicity about the way in which modern business culture affects the environment, both in terms of its legal and illegal operations. Part of the movement functions in close connection with the companies to ensure that it can have some influence on the companies' decisions. NGOs can inform companies about the norms and the responsibilities involved in environmental protection systems, and even about ways to become more environmentally sustainable in the future. It is crucial that the government assists such groups. (Dybing 2012: 289)

According to some campaigners, 'Only citizen action can help change' the kind of practices we have been describing 'and promote a healthier world' (McCormack Benson Health & Safety nd). However, where such campaigning and informal and non-statutory routes to mitigation and change fail, then there is a need for an effective legal platform. Relevant here would be proposals for the extension of environmental courts currently operating in some jurisdictions and the establishment of an International Environmental Court. The value of such courts lies in the focus and expertise that can be brought to bear on complex and technical matters that are often unfamiliar when introduced and processed through the traditional courts (Walters and Westerhuis 2013; White 2013c). Both locally and internationally, such courts could draw upon laws derived from international recognition of a crime of Ecocide (Higgins, Short and South 2013). Such a law would be a powerful preventative force supporting the principle of precaution noted above. By this means, those in superior or senior positions of responsibility would be at risk of prosecution if responsible for taking decisions that lead to, support or finance mass damage and destruction. Instead of 'the polluter pays' (if caught), the new governing principle becomes 'the polluter does not pollute' and the protection of interests shifts from those few who have ownership to the many who are at risk of suffering.

Analysis

In his 2012 book, *The Price of Inequality*, Nobel Prize economist Joseph Stiglitz argues that because of:

... the oil and coal companies that use their money to influence environmental regulation, we live in a world with more air and water pollution, in an environment that is less attractive and less healthy than would otherwise be the case. (Stiglitz 2012: 99)

The principal focus of Stiglitz' analysis is the US but, as Edsel (2012) notes of a wave of recent counterarguments against both Democratic neo-liberalism and Republican *laissez-faire* theories, the collective critique:

... is not only that inequality violates moral values, but that it also interacts with a money-driven political system to grant excessive power to the most affluent. In short, those with power use it to insulate themselves from competitive forces by winning favorable tax treatment, government-protected market share. (Edsel 2012: BR23)

He argues there are other morally and economically un-justifiable benefits that protect the powerful. Furthermore, the irresponsible and despoiling actions of the major corporations pursuing natural resource exploitation contribute to structural inequalities on the one hand and, on the other, to the distorting dominance of the GDP model of 'growth is good at any costs'.

Gross Domestic Product is used in the forums of global economic power as the system of measurement of success but this is, as many have pointed out, a rather flawed measure. For example, critics of the permanent growth aspiration note that its measurement tells us little about negative effects such as distributional and social justice. Thus countries with exceptional growth rates may display exceptional levels of inequality and an average poor quality of life. GDP reflects the sum of all the goods and services produced inside a country, divided by the number of people inhabiting it (Fioramonti 2013) but distorts the actual success of countries and their economic systems, not only because it fails to consider variable social equality but also because it includes some service sectors which signal bad, rather than good, performance. Staggeringly obvious examples of these bad performers would be oil, chemical and mining companies that need large public subsidies to produce their profits and that leave a trail of eco-wreckage that harms public health and eco-system vitality and will require yet further public funding to mitigate, remedy and clean up. In this wider sense growth, GDP and resource exploitation are not simply about economics but about deep social disruption (Carrington et al. 2011).

'GDP' has been internationally adopted as a way to conceptualise and measure the monetary value of goods and services produced and sold to consumers and was originally formulated by Simon Kuznets who, in 1932, started to generate a series of aggregate indicators incorporating the total productive output of individuals, private firms and public agencies. Kuznets himself is said to have reacted to the uses to which his 'invention' was subsequently put as he would have to the unintended creation of an economic Frankenstein. By the early 1950s, GDP (earlier termed GNP) was accepted as the magic figure describing performance across the Western world and in 1953 'the UN inaugurated its international standards for national accounts, which were largely influenced by the methodology developed by Kuznets and the US Department of Commerce' (Fioramonti 2013: 32). Imposed on developing countries, this measurement has implied that the road to a buoyant economy is built by selling resources in international markets and reducing domestic social expenditure. GDP does not take into account how developing countries are largely dependent on activity in the informal economy sector. Growth in GDP may simply reflect deepening social inequality as the affluent increase their expenditure, the luxury goods market thrives, and national resources that should be held in common are privatised or destroyed in the process of development while the poor see their purchasing power decline.

Crucially for present purposes, GDP does not adequately capture costs to the environment; nor does it assess the sustainability of the growth that is occurring. In fact, GDP counts costs to the environment as if these were a positive factor because, in official measures, such costs are seen as reflections of enterprise, productivity and wealth-creation. The counter-view would see such costs as an index of despoilation, meaning that the depletion of resources should actually equate to *diminishing* wealth and a *declining* GDP. However, the counter-view is just that, counter to the dominant and prevailing analysis which will reflect the fact that, as Stiglitz (2012: 99) puts it, 'industries like coal and oil ... don't want the scarcity of natural resources or the damage to our

environment to be priced, and they don't want our GDP metrics to be adjusted to reflect sustainability'.

Including costs to the environment as a negative item within the GDP would imply that industries should be charged for the damage caused. As they are not charged, they are indirectly receiving hidden subsidies which add to other gifts such as favourable tax treatment and access to resources at below fair market prices. Oil companies intending to intensify or multiply offshore drilling are aware that, simultaneously, they have to ensure that laws are implemented which make them unaccountable for the possible damage produced:

Because of the oil and coal companies that use their money to influence environmental regulation, we live in a world with more air and water pollution, in an environment that is less attractive and less healthy than would otherwise be the case. (Stiglitz 2012: 99)

Environmental regulations are not the only target of polluting industrial parties, as funds are also generously distributed among groups that 'scientifically' cast doubt on climate change (Goldenberg 2013).

Neo-liberal antagonism toward economic regulations argues these are costly and will reduce growth. In this view, 'regulation' is what Taylor (1997) called a 'condensed metaphor' representing a broader (and unwelcome) critique. And indeed, an alternative critical view argues that economic development that causes environmental degradation makes a negative contribution to the creation of wealth and reducing growth in a managed way is desirable (Ruggiero and South 2013) – and could help shape a 'green economy'. A green economy may be where we ideally need to get to. At the moment, the economy is resolutely resource hungry and growth orientated.

Conclusion

As Harvey (2011) writes of the lessons of neo-liberalism:

The drive towards market freedoms and the commodification of everything can all too easily run amok and produce social incoherence. The destruction of forms of social solidarity leaves a gaping hole in the social order. It then becomes peculiarly difficult to combat anomie and control the resultant anti-social behaviours such as criminality. (Harvey 2011: 80)

In turn this social incoherence extends to a loss of proper social thinking about anti-environmental behaviours (Beck 1992: 25), forms of despoilation and acts that, as Walters (2010: 181) puts it, 'create devastating conditions for the lives of local people'. Yet, at the same time as such condoning, denial and 'business as usual' continue, it is also true that 'green issues' are highly topical. In a globalised, information-rich world there is no shortage of awareness that resource depletion and climate change represent matters of urgency and challenge. The great global conundrum for the future is how to address energy deficits and balance this with addressing the problem of sustainability. A related problem faces us as we become a 'waste society': how to cope with the unwanted discards of consumer society and mounting waste as the west continues to consume at a ferocious rate and developing nations are rapidly generating their own markets and demand? In the midst of a global economic downturn, remedies for prevailing economic insecurity and depression are viewed almost entirely in terms of pushing the production lines back to full power and increasing the rate of consumption by applying 'human genius' to enterprise and exploitation. There is an interesting criminological crossroads here where public policy solutions to environmental and economic problems can prove to be criminogenic and lead to the convergence of corrupt parties in local government, business and

organised crime (Caneppele et al. 2013; Ruggiero and South 2010). Examples in this essay have included oil, chemical and processing industries but others might include the development of carbon trading markets and their misuse and, as one prime current example, widespread related fraud (Walters and Martin 2012). Perhaps what is needed for the future is less of a rapid return to ‘business as usual’ and a new turn toward ethical practice, green economics and modes of production and consumption based on principles of environmental sustainability.

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